

SHELBY LIVES ON! THIS 526-HP, \$50,000, TRACK-HUNGRY STANG WOULD MAKE THE OL' TEXAN PROUD.

CAR DRIVER

NOVEMBER 2015

ANCE. IRREVERENCE.

GOD BLESS
AMERICA



AT LAGUNA SECA,
THE FORD DOESN'T
CORKSCREW AROUND.

NEW MUSTANG

IT TAKES
HOMEGROWN
MUSCLE
TO A HIGHER
PLANE.

PLUS

GT350

ALL-NEW AUDI TT
MID-SIZE PICKUP COMPARO
BENTLEY BENTAYGA

Now, let's see. Behind us, on both sides of us, and down in front.

Let's put the days of scraping our wheels against the curb or scratching our side paint behind us. As well as nudging our front ends way out into cross-traffic to see what's coming.



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Available features shown.



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044

**FIRST DRIVE
FORD SHELBY
GT350
MUSTANG**

Ford's own prancing pinto moves the muscle car to a higher order.

by Aaron Robinson

052

**COMPARISON TEST
FROM
TACORADO TO
ETERNITY**

Chevrolet Colorado LT Crew Cab 4WD vs. Toyota Tacoma TRD Off-Road Double Cab 4x4.

*by John Pearley
Huffman*

068

**ROAD TEST
AUDI TT**

The new coupe and the perils of indecision.

by Jared Gall

086

**ROAD TEST
LINCOLN MKX
RESERVE AWD**

Lincoln channels its past in search of something new.

by Eric Tingwall

099

**LONG-TERM TEST
2015 GMC
YUKON XL
DENALI 4WD**

The joys and sorrows of life with a rock-solid three-tonner.

by Don Sherman

ON THE COVER

A red Shelby GT350 on Laguna Seca's Corkscrew? That'll do nicely.

*photography by
Anton Watts*

CAR AND DRIVER MAGAZINE ■ vol. 61, no. 5

in this issue

005

11.2015

076

**FEATURE
BRITAIN'S MOST
BRUTISH**

Blighty's quintessential sports cars storm the Isle of Man's unlimited roads.

by Aaron Robinson



ON THE TRAIL OF THE

2016 CHEVROLET SILVERADO

WITH THE FOLKS WHO CREATED IT.

The 2015 Silverado 1500 was named **"Highest Ranked Large Light Duty Pickup in Initial Quality"** by J.D. Power¹ and the new 2016 Silverado comes from the same stock. The new face of strong, Silverado has a muscular front end that reflects its strength and capability. We sat down with the team of designers and engineers behind the new Silverado, the latest addition to the family of the most dependable, longest-lasting full-size pickups on the road.²





JOHN CAFARO

EXECUTIVE DIRECTOR,
GLOBAL CHEVROLET DESIGN

This Silverado makes some great advances using new lighting technology. How did this technology inspire the vehicle design?

Lamps are the windows to a truck's soul. They help give a truck its signature look—both during the day and at night. The new LED lamps on the 2016 Silverado gave us the opportunity to create a stronger, more expressive front end while giving our drivers a substantial improvement in night driving and overall visibility. It highlights how much technology is in the truck.

Truck design is one of the hottest areas in automotive design right now. What are some of the synergies between truck and other vehicle design?

Corvette and Silverado have been the iconic bookends for Chevrolet design for more than 50 years. In the past, they had completely separate design teams. We now have a lot more cross-pollination in our design teams and design work. You can see that influence especially in the hood and grille. These trim details allow customers to express personality. Grilles are like cowboy boots—they are your calling card.

***“Grilles are like cowboy boots –
they are your calling card.”***

John Cafaro

EXECUTIVE DIRECTOR, GLOBAL CHEVROLET DESIGN



TIMOTHY ASOKLIS

CHIEF ENGINEER – 2016 FULL-SIZE TRUCK,
CURRENT PRODUCT SUPPORT

The new Silverado was engineered with multiple enhancements, including articulating running boards. How do they work?

A new feature on Silverado, available articulating running boards automatically extend down and out from the sides of the cab to act like traditional steps. Just tap the foot control and they articulate rearward for access to the bed and its contents. No competitor offers this feature.

Towing is important in a truck. What advances set the 2016 Silverado apart when it comes to towing capability?

Throttle progression and grade braking are features that have come from our engineers studying the challenges of pickup truck towing in the real world. Throttle progression, along with our available 8-speed automatic transmission, makes accelerating with a heavy tow load both smooth and quick.

Using intelligent and adaptive algorithms, steep hills are more easily handled with Grade Braking Mode, which transfers some of the burden of slowing down and stopping from the brake pads to the engine and transmission.



¹ The Chevrolet Silverado LD received the lowest number of problems per 100 vehicles among large light duty pickups in the proprietary J.D. Power 2015 Initial Quality Study.SM Study based on responses from 84,367 new-vehicle owners, measuring 244 models and measures opinions after 90 days of ownership. Proprietary study results are based on experiences and perceptions of owners surveyed in February–May 2015. Your experiences may vary. Visit jdpower.com. ² Dependability based on longevity: 1987–April 2013 full-size pickup registrations.

008

11.2015

caranddriver.com

. in this issue



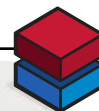
021



108



116



NEXT MONTH: PART THREE IN OUR
NEW-RULES-OF-CAR-BUYING SERIES
ON SALE NOVEMBER 3

012

EDDIE ALTERMAN

The Marchionne Doctrine.

034

JOHN PHILLIPS

Silence in the garden of Evel.

038

AARON ROBINSON

The march of progress always takes a toll.

042

EZRA DYER

Flashing back to a Bimmer past.

021

REVEAL OF THE MONTH

BENTLEY BENTAYGA

The Crewe-ship for those with the stamina to cross the Sahara.

024

WIND DAMAGE

Quantifying convertible compromises.

026

STEER CLEAR

Great steering in a world of electric assist takes mechanical honesty.

030

HECHO EN MEXICO

Your next German luxury car may never cross the Atlantic, only a border.

032

NEW RULES OF CAR BUYING

What makes Tesla more remarkable: Its cars or its retail gambit?

108

TESTED LAND ROVER RANGE ROVER SPORT SVR

The Blue Rhino.

112

TESTED SCION iM

This is not your father's Geo, except it sort of is.

116

TESTED PORSCHE CAYMAN GT4

Not quite as quick as it looks.

011

BACKFIRES

Correction: In the August issue we implied that no one likes green gummy bears. In fact, John Zweber does. We regret the error.

124

WHAT I'D DO DIFFERENTLY

Eddie Cheever Jr.

INSTRUMENTED TEST

2015 CHRYSLER 300 V-8

Finally, Chrysler's eight-speed hits the eight-cylinder 300 sedan.

CARandDRIVER.com/2015300V-8

GLAMPING!

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CARandDRIVER.com/BentleyCamping

INSTRUMENTED TEST

2016 SCION iA MANUAL

Frightful to look at, delightful to drive.

CARandDRIVER.com/2016ScionIA

FIRST DRIVE

2016 BMW 7-SERIES

Luxury now comes with a delicious carbon core.

CARandDRIVER.com/2016BMW7series

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THE NEW 2016

RDX

DRIVE LIKE A BOSS

RDX with Advance Package shown. *20 city/29 highway/23 combined mpg rating for RDX FWD model. Based on 2016 EPA mileage ratings. Use for comparison purposes only. Your actual mileage will vary depending on how you drive and maintain your vehicle. ©2015 Acura. Acura, RDX, and the stylized "A" logo are registered trademarks of Honda Motor Co., Ltd.



backfires

hosted by E.D.

011
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Sic your dogs on us at:
editors@caranddriver.com
or join the discussion at:
backfires.caranddriver.com



TURNOFFS

In your August 2015 comparison test of the BMW M3/Mercedes-AMG C63 S/Cadillac ATS-V ["Radar Bait"], you lamented how many steps it took to shut down a "modern BMW." As an owner of two such animals, I think I can help you out. This procedure is not very well promoted by the dealers but works every time.

1. After coming to a stop, just push the start/stop button to shut the engine off. The gear selector will move to park on its own.

2. Although the accessories are still on, just exit the car.

3. Lock the car from the outside and everything shuts off inside and the security system arms. Or, if you don't want to lock the car, just walk away and everything will shut off on its own after some time, I think about seven minutes.

I've learned that the benefit to the way the shutdown was designed is that you can finish a call in your car, read those last few

emails, listen to the last few minutes of a song, etc., with the engine off before exiting as the accessory power stays on. Feature, not bug.

JOE PRZEPIORKA
WOODRIDGE, ILLINOIS

We know. It's still annoying—Ed.

PORTS OF ENTRY

I enjoyed the sports-sedan comparison test, but I found the final scores

amusing. Here we have these three snarling beasts of the automotive world, targeting the upmarket, performance-minded buyer, and the winning score turns on fuel economy. If the fuel-economy score were equal for all three, the result would've been a two-way tie [*No—Ed.*]. Fuel economy is unlikely to be a major point for the buyers of these cars. Even so, the scores are so close that it really comes down to a matter of taste. What will impress the most when the conversation turns to cars—and it always does—in the country-club locker room? The answer to that question lies in the hands of the marketing department more than the engineering department.

CULLEN DAVIS
NORTH HOLLYWOOD,
CALIFORNIA

My question is why doesn't GM just hire you guys as consultants to tell them what sucks before embarrassing themselves again. Ugh. Another long wait. I can't take it anymore.

JACKSON L.
GLENDALE, ARIZONA

Take away rear-seat comfort, rear-seat space, and fuel economy, and the ATS-V ties for the win.

TOM SMITH
LAKE VILLAGE, ARKANSAS
Yep. Just take away whatever makes you feel better—Ed.

A BMW can have fake leather seats (referring to past tests), cost \$15,000

BORDERLINE PERSONALITIES

From the August "24 Hours of Europe," regarding the gummy-bear question, "Does anyone like the green ones?" Yes. Especially when they're fresh from the factory store in Bonn. I also echo Duff and Johnson's review of McDonald's franchises in Europe. I ate at one recently in Ingolstadt and was impressed with the design and furnishings.

JOHN ZWEBER
GILBERT, ARIZONA

Yeah. Yeah. I've read your Yelp review of that McDonald's—Ed.

MORE BORDERLINE PERSONALITIES ON PAGE 014.

more than the others, and have a basic interior, but drives the best and it wins all tests. When a Cadillac drives the best it comes in last because the interior needs some work.

JEFF
CANTON, GEORGIA

Did you accidentally switch the C63 S's and ATS-V's acceleration data? The AMG is not as quick as I would expect given its power and torque outputs, while the ATS-V seems incredibly quick relative to the manual transmission-equipped model you tested earlier. I've driven a C63 S and an M4 back to back, and the AMG felt stronger as measured by my pant seat.

WALTER KONG
IRVINE, CALIFORNIA
It's time to recalibrate the Dockers, Kong—Ed.

Yeah! That ATS-V is one *helluva* car... a real German beater... except for the engine... oh, and the design... But other than those minor details, it is a *car for the ages!* A real deal for \$75,000.

Dee-troit is back, baby!

COL. F "HEAD LIKE A HOLE"

CHICAGO, ILLINOIS

In the ATS-V, C63 S, and M3 comparison test, you claim that the ATS-V has a "dull engine" that's "not as exciting as it should be," "lacking the low-end torque and aural thrill of the Benz's V-8 or the high-end rip (and fuel economy) of the smaller BMW six." Really?! After reading all of this, if it weren't for the comparo chart on page 42, I'd confidently assume that the Caddy was the slowest of the three, but not so by a long shot. At a claimed 122 mph in the quarter, it is 5 mph faster than the M3. Oddly, it easily outpaces the more powerful C63 in all the categories. BTW, when I actually see a stock ATS-V run 122 mph in the quarter-mile, I'll become a believer of that, too!

RICHARD LASSETER

VALDOSTA, GEORGIA

If this relationship is going to work, you're really going to have to trust us—Ed.

Received your latest magazine and I'm curious why the Lexus RC F was not included in this comparison.

TOM FALKOWSKI

SOMERS, CONNECTICUT

It has something to do with Jim Morrison's band—Ed.

SPORTING NEWS

If Jeff Sabatini were to write a letter to the Mazda MX-5 Miata ["Fanfare for the Common Man," August 2015], I think it would begin, "I fear my orgasms have left me a cripple," and end with, "P.S.: Loved the cabin." I had a couple myself just reading the story.

DAVID ROBINSON

WEST COLUMBIA, SOUTH CAROLINA

Your August road test of the new MX-5 Miata has taught me two things:

1. It has the body roll of a minivan.
2. Buy a Ford Mustang instead.

CAMERON KORZ

EGG HARBOR TOWNSHIP, NEW JERSEY

For a recent earnings call, Fiat Chrysler CEO Sergio Marchionne took what he called "a dispassionate look" at the auto industry and pronounced it broken.

There is too much engineering duplication against too many rising expenses, he said, even with all the common componentry in today's cars. He claimed the industry is killing shareholder value with this "pure economic waste," and the right way to fix it, for Fiat Chrysler at least, is to merge with another automaker.

He's mostly right, of course. All car companies' profit margins are slim, especially Fiat Chrysler's. The industry is a burial ground of inefficiencies. And the amount of capital, human and otherwise, required to keep making cars in today's technical and regulatory environments is staggering.

But here's what Marchionne's dispassionate look does not take into account: passion. The car business runs on it. We don't actually need new cars every seven years, or different lease cars every three, but we want them. Our auto market is the surest proof that we are irrational beings. We want the latest in performance and style, and we want our performance and style to be different than the other guy's. We want choice. But variety and the sort of deep brand identity born of technical innovation would be casualties of the Marchionne Doctrine.

Let's pretend that a merger of GM and Fiat Chrysler did happen. Let's call this new entity, um, American Motors. Would AMC's cost savings be sufficient to loft its stock prices to Silicon Valley heights, or would Wall Street still think of it as an industrial-age dinosaur? And in this scheme, wouldn't shoppers be the losers, getting less brand character and fewer emotional reasons to buy a new car? A centralized R&D staff would mean that one engineering philosophy would prevail. Powertrains and their personalities, despite tuning, would be largely uniform. Marchionne's analysis points out that exteriors and interiors together make up around 55 percent of a car's development cost, so something more than just a benevolent "house style" would be in effect. One might argue that commonality already pervades the industry—see the omnipresent ZF eight-speed transmission—but common R&D on the corporate level would be far more damaging to brand essence than a common gearbox. It's easy to imagine this uniformity suppressing sales.

The auto industry already does more to drive the economy than Silicon Valley, and without the element of excitement, those prayed-for Googlian share prices will never materialize. Even with, it's a long shot. A megamerger would cap automotive expression as it would the industry itself. Marchionne's plan might save billions at first, but it poses a great risk: destroying the emotional currency on which car sales trade.



Eddie Alterman

EDITOR-IN-CHIEF



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014
11.2015

. backfires

Good review of the new Miata. However, one crucial question unanswered: Can you fit a set of golf clubs in the trunk?

ART JARIT

WADING RIVER, NEW YORK

Yes. As long as they are miniature golf clubs—Ed.

SECRET SAUCE

Your road test of the 2017 Jaguar XE S ["Building Character," August 2015] has done it. I will now tell you a secret I have been harboring for decades. In every road test, you list the tested car's competitors and rank them in four key categories—[usually] price, braking, acceleration, and roadholding. I've summarized those results into a single number. If a car achieves a top ranking in any category, it gets a score of 1, and on down. Add up each of the four numbers and the car with the lowest score wins. The XE S got a 5 (2+1+1+1), a rarely achieved number, showing just how superior it is to the competitors listed. The others scored a 9, a 12, and a 14.

I call this number the "S Number." So here's a good idea, and we all know you need good ideas. I think you should go back and provide the S Number for each

competitor in each road test in a table.

By the way, if the upcoming Jag is as good as my ride, an XJL, they've got a winner on their hands, just as the S Number indicates. Why not find the perfect 4s and the completely imperfect 16s of the past. They are rare. I've been watching. Go for it.

BOB SOUTHARD

LANCASTER, PENNSYLVANIA

I sent your letter to the tech department, but they were too busy fighting over the thermostat to reply—Ed.

BORDERLINE PERSONALITIES

Mike Duff and Davey G. Johnson were the epitome of ugly Americans abroad ["The 24 Hours of Europe," August 2015]. They insulted almost every country in Europe and many of the inhabitants. The article was offensive, not funny, and could set back American/European relations for years, let alone reduce *Car and Driver's* prestige.

TERRY HARRIS

SPRINGFIELD, OHIO

Duff is actually an ugly Brit—Ed.

As a subscriber of your magazine for quite many years, I've so far enjoyed most of the normally well-written and illustrated articles in every

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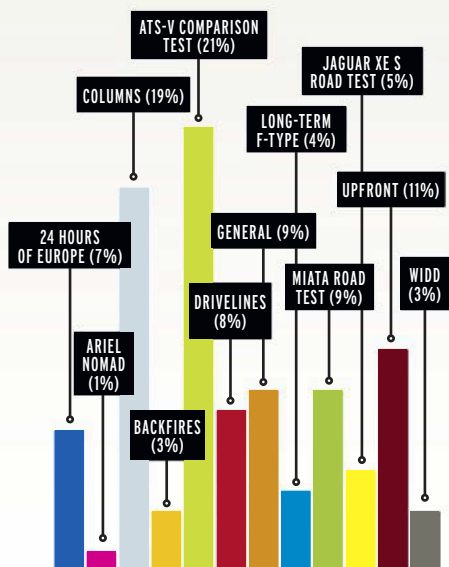
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★ STACKS OF MAIL



issue. But please don't repeat such nonsense as "The 24 Hours of Europe"! What did Duff and Johnson see of the 18 countries they had "touched" or "mastered" in those 29-plus hours? And what impressions did they get? Was the whole exercise really worth the trouble?

MAX STOOP

LANGNAU AM ALBIS, SWITZERLAND

RENTAL REDO

While I agree with Mike Sutton's disappointment that Ford does not offer more options for the Mustang V-6, all is not lost [Drivelines, August 2015]. One of the great things about those cars is that there are plenty of aftermarket parts available to personalize them.

I'd start with the V-6 with the manual and go with the limited slip and the 3.55:1 ratio, if that is not standard with the six-speed. I'd save my money by avoiding MyFord Touch and leather seats. I'd use that money to buy a nice set of aftermarket wheels and summer tires. I'd set the stock wheels and tires aside for winter driving. If I were still not pleased with the performance, I'd upgrade the suspension, and perhaps the exhaust, with some parts from the Ford Racing catalog. Total cost should still just be a bit over \$30,000 for a personalized V-6 Mustang that would be fun to drive for much less than the price of a GT.

JOHN MCILNAY

DUNLAP, ILLINOIS

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ACURA-CY

My 2004 Acura TSX has more than 145,000 miles, and I am still impressed with the design and quality of this car.

I am writing to you specifically to tell you that I thought the recent review by K.C. Colwell of the 2016 Acura ILX A-Spec was excellent [Drivelines, August 2015]. Realizing that I will have to replace my TSX someday, I drove a 2015 Acura ILX. The TSX is a joy to drive and looks and handles as it did when new. The ILX was vapid, just another car and not worth the money. I tried to explain to my wife how disappointed I was after driving the ILX, and she now understands after reading your accurate review.

PETER HANSON
INTERNETLAND

STRAIGHT OUTTA TIPPER

Just a little feedback on John Pearley Huffman's piece with Ice Cube ["Have an Ice Day," August 2015]. You don't have to

★ LETTER OF THE MONTH



You guys have almost convinced me to get the new Mazda Miata, but I think I need to read just one more article about it.

ROBERT KEMPF
ATLANTA, GEORGIA

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. back



repeat Ice Cube's profanities verbatim. I'm sure you have other words. Well, maybe not. So no more fucking profanities... okay?

PHIL MORTELLO
SHOW LOW, ARIZONA

I will think quite seriously whether I should renew my current subscription

★ WHO LOVES YA, BABY?



PHOTO FINISH

Mike Sutton gives a good, truthful accounting of the Ford Mustang V-6 in the August issue, and I don't disagree with his conclusions. However, you choose to show a nice motion photo of the car shot by Marc Urbano (which could be almost any of the new Mustang models) and a photo of the interior, mostly dashboard (which is similarly common to all the new Mustangs). The "thrust" of the review was the V-6 engine, yet you failed to show us any photos of it.

KEITH KEPLINGER
MARIETTA, GEORGIA

Here's a photo of it in all of its V-6 glory—Ed.

with your publication. Several of my friends voiced the same feelings for the same reasons shown hereunder. You as an automotive publication and experts have sunk to a very low level, especially when reading the interview by John Pearley Huffman with trash-talking Ice Cube (O'Shea Jackson Sr.). Is there a need for publishing full F-words instead of just blinking them?

BOB K. VACKAR
LEBANON, OHIO

Congratulations. On the worst piece ever published in your fine magazine.

STEVE SCIGLIANO
VANCOUVER, WASHINGTON

WAR TORN

Never in 35 years of reading *Car and Driver* could I imagine that my first contact with this fine magazine would not involve automobiles, but the final sentence of the Editor's Letter in the August 2015 issue.

I write only to let you folks know my father served in the 11th Armored Division of General Patton's Third Army. Sometime before his death in May 2004, he let me know he was one of the first soldiers to enter the Mauthausen camp after the German guards fled.

My thanks to Eddie Alterman for writing about his experience in Europe, describing an incomprehensible reality at Gusen and bringing to light what happened in Linz, Austria, 70 years ago.

JOHN JANKOWSKI
CINCINNATI, OHIO

FOOL'S GOLD

I am not writing with the intent of getting my letter published. I just wanted to say that the number of pages you devote to readers' letters is a very clear reflection of how you value us. Thank you.

PAUL MERRILL
LITTLETON, COLORADO

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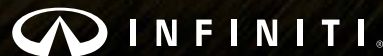
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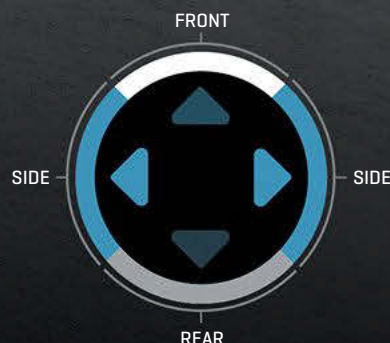
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★ EXPERIMENTATION

PROGRESS THROUGH CRITIQUE

Bentley's first shot at a crossover, the EXP 9 F concept, looked like a Mulsanne SUV and was met with widespread derision. So designers changed course and came up with this alternative.

upfront

□ edited by JARED GALL



INITIALLY, A W-12 WILL BE THE ONLY ENGINE. A PLUG-IN HYBRID AND A DIESEL MAY BE ADDED IN A FEW YEARS.

REVEAL OF THE MONTH

British Chasing Green

THE BENTLEY FOR THOSE WITH THE STAMINA TO CROSS THE SAHARA. *by Don Sherman*

THAT BEGUILING SCENT wafting through the harvest air is familiar: Oh, yeah, it's the smell of money. Markets are roiling, inflation's down, and the great recession is a shrinking speck in the rearview mirror. The wealthy have itchy wallets. They're amenable to freshening their fleets and sharing a whiff of their good fortune with the world at large.

It's the perfect time, then, for Bentley to expand its portfolio. On a mission to deliver the most power, exclusivity, and prestige ever seen in an SUV, Bentley's new Bentayga will ensure that a sand dune never impedes a trip to the Mall of the Emirates. And where this Bentley ventures, others are sure to follow. Lifestyle-support vehicles from Lamborghini and Maserati will trail the Bentayga's 2016 arrival, with competitors from Rolls-Royce and Aston Martin also more than probable.

■ DESIGN

Bentleys have always been imposing, but the Bentayga towers over its surroundings in a way none has before. At 68.6 inches tall, it's nearly nine inches loftier than any other Bentley. Exterior designer Sang Yup Lee had a vast screen on which to project Bentley's "powerful, exquisite, and individual" power points.



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11.2015

caranddriver.com

. **upfront** . REVEAL OF THE MONTH

YOU'VE GOT YOUR MOTHER'S TAILPIPES. IN BOTH THE CONTINENTAL AND THE FLYING SPUR, OVAL FINISHERS MEAN THE CAR HAS A W-12.

The Bentayga is essentially Continental and Flying Spur sculpture retailored in big-and-tall size. A face dominated by wide eyes and hungry grilles signals the hoi polloi to step aside. Sweeping side creases and prominent rear haunches showcase wheels ranging from 20 to 22 inches in diameter. The roof arch and a hatch, angled more steeply than the windshield, express Bentayga's bent for speed. And Lee's painstaking attention to detail is evident in the body-colored running-lamp pupils concealing the headlamp washers, the subtle front-fender creases achievable only by hot stamping, and side vents accented with B logos. Exhaust outlets are large enough to serve a Greyhound bus.

CHASSIS

Erected on the VW Group's MLB architecture shared with the Audi Q7 and the next Porsche Cayenne, the Bentayga rides on a 117.8-inch wheelbase and stretches 3.5 inches longer than the Q7, to 202.4. It has aluminum skin over bones formed from steel and aluminum. This is Bentley's first use of aluminum castings in a structural role; they serve as nodes for anchoring the front air springs, rear suspension sub-

What's a Bentayga?

A:
The lost Mesoamerican tribe that invented the automobile centuries before Fred Flintstone discovered the remains of one in a junkyard.

B:
A 4642-foot-high mountain peak on Spain's Gran Canaria Island.

C:
A portmanteau of "Bentley" and "Taiga," a dense forest that blankets northern latitudes.

D:
Gaelic for "profitable."

Answer: B and C.

frame, D-pillars, and front bumpers. Bentley claims this saved 500 pounds over all-steel construction, quoting a curb weight of 5340 pounds—700 pounds lighter than the flagship Mulsanne.

Air springs support a poised ride and four height settings. The steering is of the variable-ratio variety with electric assist. A 48-volt electric circuit adjusts the stiffness of the front and rear anti-roll bars. To aid off-road treks, the dash displays pitch, roll, wheel articulation, steering angle, altitude, and compass heading. Eight different driving modes cover all manner of on- and off-road contingencies, including wet grass.



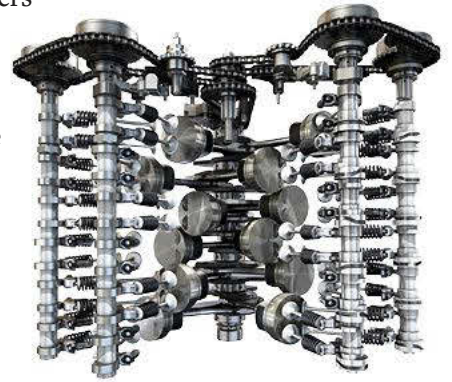
WHAT YOU CAN'T SEE HERE IS HOW DENSE THE W-12 IS WITH MOVING PARTS. BUT YOU CAN SEE THAT IN THE IMAGE TO THE RIGHT.



ENGINE

Bentley is proud to have been assigned assembly responsibility for the VW Group's new 6.0-liter W-12. Variable intake- and exhaust-valve timing, direct and port fuel injection, and a pair of Bosch Mahle turbos hammer out 600 horsepower and 664 pound-feet of torque. The company claims a 4.0-second zero-to-60 sprint and a 187-mph top speed. To improve fuel efficiency, half the cylinders shut down when not needed.

Compared with a two-wide-by-six-long V-12, Bentley's power cube is four cylinders wide and 3.5 cylinders long, a boon to underhood packaging. And the new-generation W-12 is 66 pounds lighter than its predecessor. Cramming a dozen cylinders, four camshafts, and 48 valves into this box is no mean feat. What stops other makers from using the exotic W engine layout is the long path the inner cylinders' exhaust follows before escaping the heads. This transfers more than the normal amount of heat to the cooling system, diminishing fuel efficiency.



INTERIOR

Jaws reflexively drop upon entering the Bentayga's inner sanctum. Designer Darren Day interpreted Bentley's double-wing cockpit motif with due respect for handcrafted quality, functionality, and occupant comfort. Bright bezels less than one-sixteenth of an inch wide separate control panels from surrounding trim. Knob-surface knurling is finer than what you'll find on a Rolex's winding crown. More than a dozen hides are tanned, stitched, and quilted to a fare-thee-well to upholster the 22-way power-adjustable seats. And the wood shop at Crewe takes burled walnut from multiple locations around the globe, peeling, pressing, matching, sanding, lacquering, polishing, and wrapping it over the compound-curved dash.

The standard three-person rear bench splits and folds as usual, and an optional third row expands passenger capacity from five to seven. Alternatively, a four-seat configuration ditches both rear-most rows for two thrones similar to the front buckets, as well as a fixed rear partition. Ninety control modules operate the touch screen, head-up display, night vision, and comprehensive suite of driver-aid systems. Those who enjoy typing on the fly will want the twin-rear-seat setup's optional integrated, removable tablets.

INCLUDED IN THE OFF-ROAD FRIPPERY ARE SETTINGS FOR VARIED TERRAIN AS WELL AS READOUTS FOR PITCH, ROLL, AND WHEEL ARTICULATION.

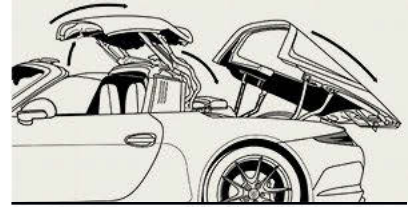


SUPERMODELS DON'T COME OUT OF COSMETIC SURGERY WITH STITCHING AS FINE AS THAT IN A BENTLEY INTERIOR.



Bentley plans to manufacture only 3600 Bentaygas next year, one-third of which are slated for Americans with an open garage slot and at least \$185,000 to blow. Asked where the newest Bentley will fit in the Volkswagen Group's pecking order relative to Porsche's 570-hp Cayenne Turbo S and the 2018 Lamborghini Urus, Bentley CEO Wolfgang Dürheimer stressed: "Bentayga will be the fastest, most luxurious, and most exclusive SUV—that's its place. No other SUV will offer this unique combination."

It's not the heaviest convertible, but **Porsche's 911 Targa** has the most interesting (and undoubtedly most complex) means of introducing wind to hair.



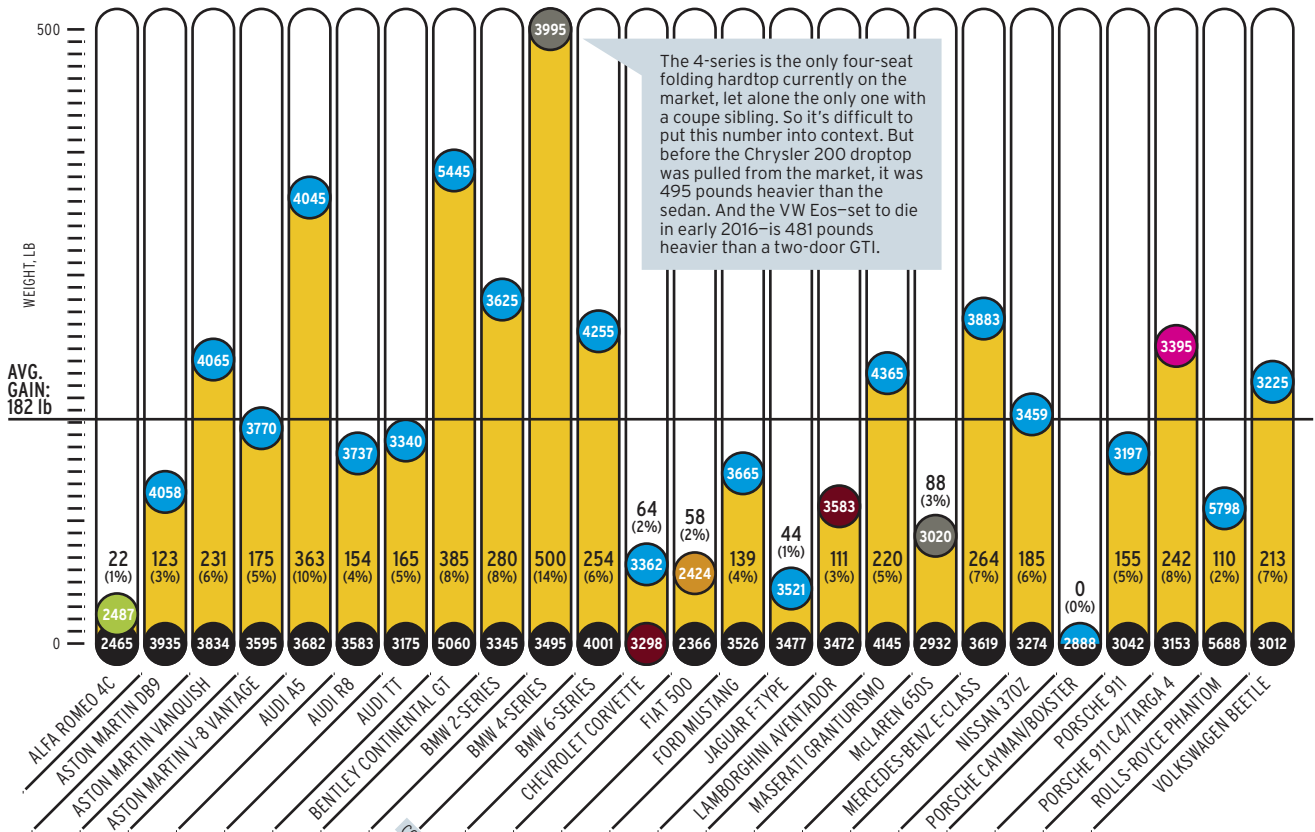
Wind Damage

QUANTIFYING CONVERTIBLE COMPROMISES. *by Jared Gall*

LAY THE OLD ROOSTER on the chopping block and he'll be a little lighter after the hatchet falls. It's a sad fact that the opposite is true of cars. Subtract the top and you've got to add a bunch of stuff back in. But, while convertibles consistently weigh more than their coupe counterparts, by how much is hardly a constant. Here, we've compiled their manufacturers'

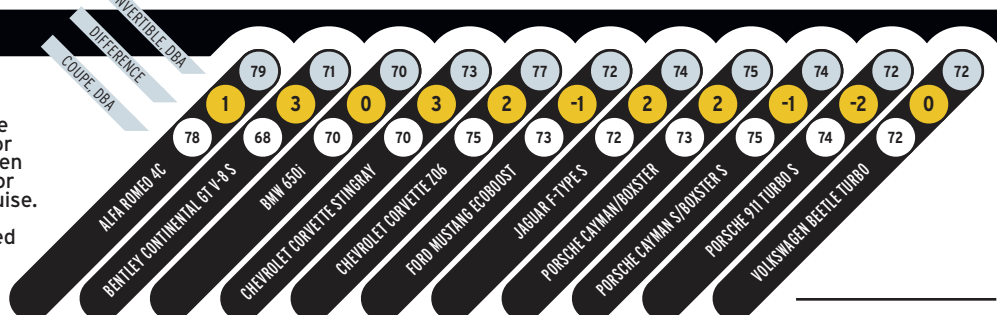
quoted weights for 25 current coupe/convertible pairs. The true heavyweights are not the ones you'd expect. Clever automakers anticipate that both open and closed body styles will spring from a common platform and engineer their cars to minimize the convertible's weight gain and added manufacturing complexity. Case in point: Porsche's Cayman and Boxster weigh the same.

key ● - COUPE ● - SOFTTOP CONVERTIBLE ● - HARDTOP CONVERTIBLE ● - GIGANTIC-SUNROOF QUASI "CONVERTIBLE"
● - SOFT-PANEL TARGA ● - HARD-PANEL TARGA ● - POWER-FOLDING SOFT-PANEL TARGA ● - WEIGHT GAIN (PERCENT GAIN)



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*Horsepower claim based on manufacturer published specifications. Class defined as the 2016 Audi A3 e-tron, 2015 BMW i3, 2015 Lexus CT, 2015 Chevrolet Volt, 2014 Honda Accord PHEV, 2015 Ford C-MAX, 2015 Nissan LEAF, 2015 Toyota Prius and the 2015 Mercedes-Benz B-Class ED. "Audi," "e-tron," "Truth in Engineering," all model names, and the four rings logo are registered trademarks of AUDI AG. ©2015 Audi of America, Inc.

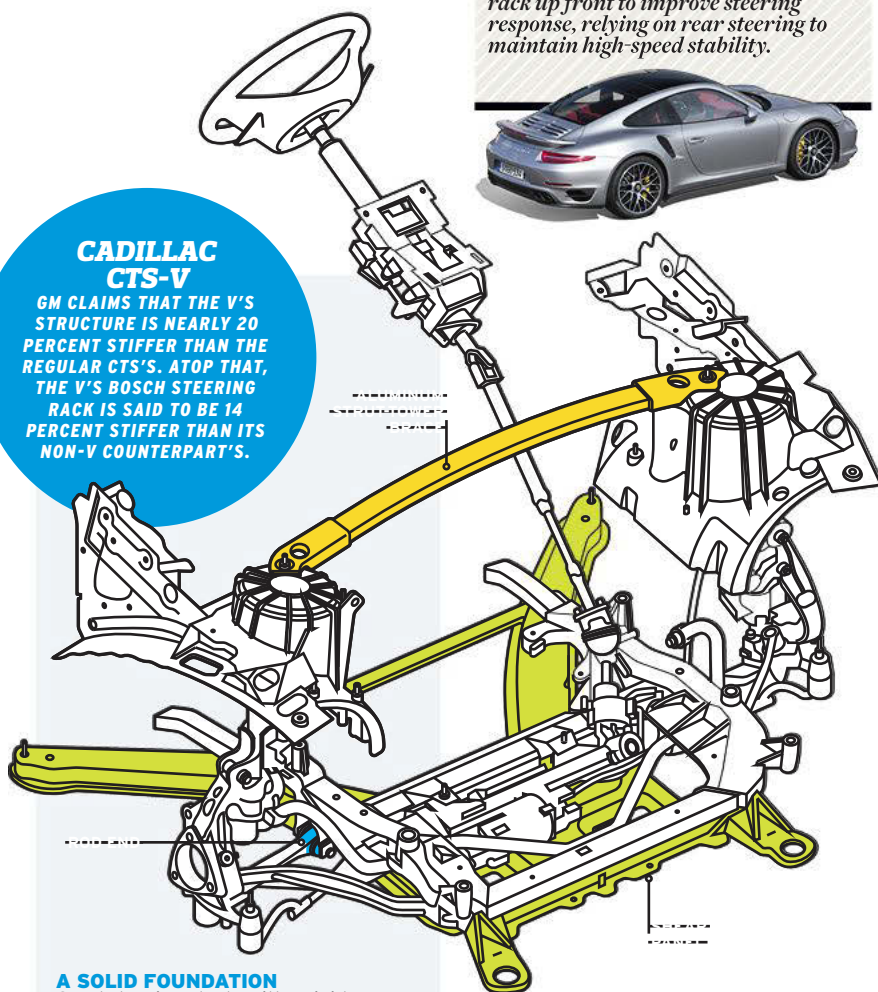
Steer Clear

GREAT STEERING IN A WORLD OF ELECTRIC ASSIST TAKES MECHANICAL HONESTY. *by Csaba Csere*

THERE'S NO CONTROL in a car more central to driver involvement than steering. And there's no control that juggles more variables to get satisfying feel—that just-right balance of how much force the driver has to apply to the steering wheel to change direction; how immediately and linearly the car responds to that input; and how much that effort and response change according to road conditions and grip levels. We call this trifecta “effort, response, and feedback.” They’re particularly tricky to master now that electric power steering (EPS) is consigning hydraulic assist to history. EPS improves fuel economy, but the addition of an electric motor to the steering system has not benefited drivers. The drag and inertia of the motor and its connecting mechanisms create new challenges for engineers hoping to coax engaging, informative sensations through a car’s steering wheel. We spoke with engineers from three manufacturers—Cadillac, Mazda, and Porsche—currently turning out the best steering on the market. All three emphasize that all-around great steering starts with the mechanical layout: stiff structure, favorable suspension geometry, and minimal friction. To wit:

CADILLAC CTS-V

GM CLAIMS THAT THE V'S STRUCTURE IS NEARLY 20 PERCENT STIFFER THAN THE REGULAR CTS'S. ATOP THAT, THE V'S BOSCH STEERING RACK IS SAID TO BE 14 PERCENT STIFFER THAN ITS NON-V COUNTERPART'S.

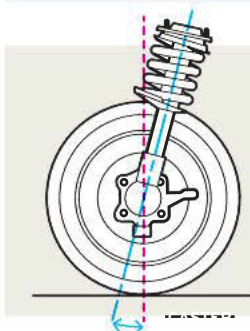


A SOLID FOUNDATION

Good steering starts with a rigid structure. Deflections anywhere in the suspension connections to the chassis cause delays, reduce steering response and precision, and complicate the job of providing feedback to the driver. Tony Roma, chief engineer on the Cadillac CTS and V cars, tells us: “On the V models, we added underbody shear panels and tower-to-tower braces. We swapped bushings for rod ends to sharpen steering response.” Porsche goes even further on cars with its optional Porsche Dynamic Chassis Control (PDCC). Manfred Harrer, Porsche’s director of vehicle dynamics and performance for production cars, says that PDCC quickens response without changing the steering calibration by tightening the dampers and anti-roll bars.

COMPROMISE

Dave Coleman, vehicle development engineer at Mazda, explains the biggest challenge: “The problem is that what you and I call feedback, most people call disturbance.” That makes cultivating feedback a balancing act between the stiff components that sharpen response and the more compliant ones needed for a quiet and comfortable ride. Reducing friction throughout the steering system is critical; it allows engineers to fine-tune the damping in the system through software calibration. Good EPS systems even incorporate programming to compensate for the electric motor’s inertia. That’s just one of as many as 150 variables in EPS control software for engineers to adjust. Cadillac’s Roma says: “In tour [mode], the car should operate with comfortable effort and minimal feedback. But in track mode, we turn off the algorithms for artificial lane centering, crown compensation, etc. That enables the EPS to focus on feedback to the driver.”



GEOMETRY

The next step is optimizing wheel alignment. Caster is the angle between vertical and the axis about which the front wheels steer, and it’s critical for good steering. With greater caster, the tires’ contact patches move farther laterally as you steer the front wheels. That extra displacement produces larger self-aligning torque, which means greater self-aligning in the steering and a more natural effort. Mazda’s cars run seven degrees of caster. Porsche 911s run eight degrees. Most cars run half that much.

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PROMOTION

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Today you can spend half the energy you used to when taking out the trash. The key: venting channels. BRUTE's new container design creates air circulation that eliminates the vacuum effect, which occurs when lifting bags out of traditional containers. Plus, it reduces exertion on the handler through greater ergonomics. So your toughest job just got a whole lot easier.





50% EASIER TO LIFT LINERS

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BUILT IN VENTING CHANNELS



CINCHES KEEP BAG FROM FALLING IN



BRUTE®

Hecho en Mexico

YOUR NEXT GERMAN LUXURY CAR MAY NEVER CROSS THE ATLANTIC, ONLY A BORDER. *by Jeff Sabatini*

WHEN THE LAST ORIGINAL BEETLE rolled down the assembly line in 2003 and they cued the band in celebration, it was a mariachi band. Volkswagen was still building its Bug in Mexico decades after emissions and safety regulations had rendered the car obsolete elsewhere, saying a lot about the Type 1's enduring charm. But it also made a less flattering statement, one that cast the Mexican auto industry as a dumping ground for antiquated car designs.

The situation today couldn't be more different. Automakers have announced \$24.2 billion worth of investment in Mexico since 2010, nearly a third of all new spending on North American factories according to the non-profit Center for Automotive Research (CAR) in Ann Arbor, Michigan. Five new Mexican assembly plants have opened in that time, producing Ford Fiestas, Honda Fits, Mazda 2s and 3s, Nissan Sentras, and Ram ProMaster vans.

Another five plants are slated for Job One in the next five years, some of them producing—gasp!—German luxury vehicles. Volkswagen Group, for example, will spend \$1.3 billion on an Audi plant, for which it is sending some Mexican employees to Ingolstadt for apprenticeships of up to two years. BMW has announced its own billion-dollar assembly plant that will go online in 2019. The Daimler and Renault-Nissan joint venture is constructing a plant with a similar price tag, where it will start building Infinitis in 2017 and Mercedes models in 2018.

Predictably, manufacturers have been drawn to Mexico for its low wages. Mexican autoworkers' compensation is only about 20 percent that of their U.S. counterparts. This means a Chevrolet Sonic manufactured at GM's Ramos Arizpe plant costs the corporation \$674 less than it does to build the same car in Michigan, according to CAR. That advantage is greater than the typical profit margin on a subcompact.

But Mexico's appeal goes beyond cheap labor. Carmakers say that Mexican workers are capable of building vehicles to a standard that meets or exceeds that of their best plants elsewhere. No less than Toyota, the world's most manufacturing-obsessed car



AUTOMAKERS HAVE ANNOUNCED \$24.2 BILLION WORTH OF INVESTMENT IN MEXICO SINCE 2010, NEARLY A THIRD OF ALL NEW SPENDING ON NORTH AMERICAN FACTORIES.

company, chose Mexico for its first new factory in North America since 2011. It will start building Corollas in 2019 at a site northwest of Mexico City in Celaya, Guanajuato, that is being described as a new model for the company.

"Mexican plants have been some of the best in North America," says Ron Harbour, a manufacturing expert and partner at the consulting group Oliver Wyman. Harbour says the German carmakers will undoubtedly build their luxury vehicles in Mexico "to the same standards as they do in their own country."

But competitive build quality and a few hundred dollars of labor savings are not primarily what makes our southern neighbor so attractive to the luxury brands. Mexico has free-trade agreements with more than 40 countries, including both the United States and European Union members, making it a favorable production site for so-called "global models" sold in multiple markets, such as Audi's Q5. When the Volkswagen Group begins production of the popular crossover in San José Chiapa next year, not only will it be possible to supply the United States with its bestseller tariff-free, but it can also ship Mexican Q5s to Germany (where they are built today) without paying the EU import tax. The math is compelling: On a \$45,000 vehicle, Volkswagen could pocket an additional \$1125 on U.S.-bound vehicles that would otherwise be subject to a 2.5-percent duty, and it might save \$4500 on those models that go to Europe, which has a 10-percent levy.

Whether Mexico continues to attract more German investment will depend on how these initial efforts fare. Potential hurdles lie in developing a deeper supplier infrastructure in Mexico, as well as combating public perception of German cars not built in Germany. And with the United States currently negotiating two separate trade agreements that could eliminate or reduce motor-vehicle tariffs with countries in Europe and 11 other nations, Mexico might lose its trump card. The Trans-Pacific Partnership could be headed to Congress soon, according to reports, with the Transatlantic Trade and Investment Partnership to follow next year.

"Every trade agreement we sign lessens Mexico's advantage," says Sean McAlinden, executive vice president of research and chief economist at CAR. "But the window is closing. You don't build these plants twice."

Carmakers have been building assembly plants in Mexico for decades. But from 2008 to 2019, they'll have built more than they did in the previous 40 years.

○ - COMPANY ○ - CITY
○ - YEAR OPENED ○ - PRODUCT

TOYOTA
○ Tijuana
○ 2003
○ Toyota Tacoma

FORD
○ Hermosillo
○ 1986
○ Ford Fusion, Lincoln MKZ

HONDA
○ El Salto
○ 1995
○ Honda CR-V

GENERAL MOTORS
○ Silao
○ 1995
○ Chevrolet Cheyenne, Silverado; GMC Sierra

MAZDA
○ Salamanca
○ 2014
○ Mazda 2, 3

HONDA
○ Celaya
○ 2014
○ Honda Fit, HR-V
TOYOTA
○ Celaya
○ 2019
○ Toyota Corolla

FIAT CHRYSLER
○ Saltillo
○ 1995
○ Ram pickups

FIAT CHRYSLER
○ Saltillo
○ 2013
○ Ram ProMaster

GENERAL MOTORS
○ Ramos Arizpe
○ 1981
○ Chevrolet Captiva Sport, Sonic; Cadillac SRX

HYUNDAI-KIA
○ Pesquería
○ 2016
○ Kia Forte

FORD
○ Mexico City
○ 2010
○ Ford Fiesta

VOLKSWAGEN
○ Puebla
○ 1967
○ Volkswagen Beetle, Golf, Jetta

VOLKSWAGEN
○ San José Chiapa
○ 2016
○ Audi Q5

FIAT CHRYSLER
○ Toluca
○ 1964
○ Dodge Journey; Fiat Freemont, 500

RENAULT-NISSAN
○ Cuernavaca
○ 1966
○ Nissan NP300, NV200, Tiida sedan, Tsuru

GENERAL MOTORS
○ San Luis Potosí
○ 2008
○ Chevrolet Aveo, Trax
BMW
○ San Luis Potosí
○ 2019
○ TBA

RENAULT-NISSAN
○ Aguascalientes
○ 1992
○ Nissan March, Note, Sentra, Versa

RENAULT-NISSAN
○ Aguascalientes
○ 2013
○ Nissan Sentra

RENAULT-NISSAN
○ Aguascalientes
○ 2017
○ Infiniti & Mercedes models

PAYING IN PESOS

Autoworkers in Mexico earn far less per hour than those in Europe or the rest of North America but are still well ahead of workers in China and India.

DATA COMPILED BY CAR

GERMANY

\$62.63

FRANCE

\$46.23

JAPAN

\$41.24

ITALY

\$41.04

CANADA

\$39.04

U.S.

\$37.62

U.K.

\$37.00

KOREA

\$26.96

BRAZIL

\$17.03

POLAND

\$10.70

TAIWAN

\$9.95

MEXICO

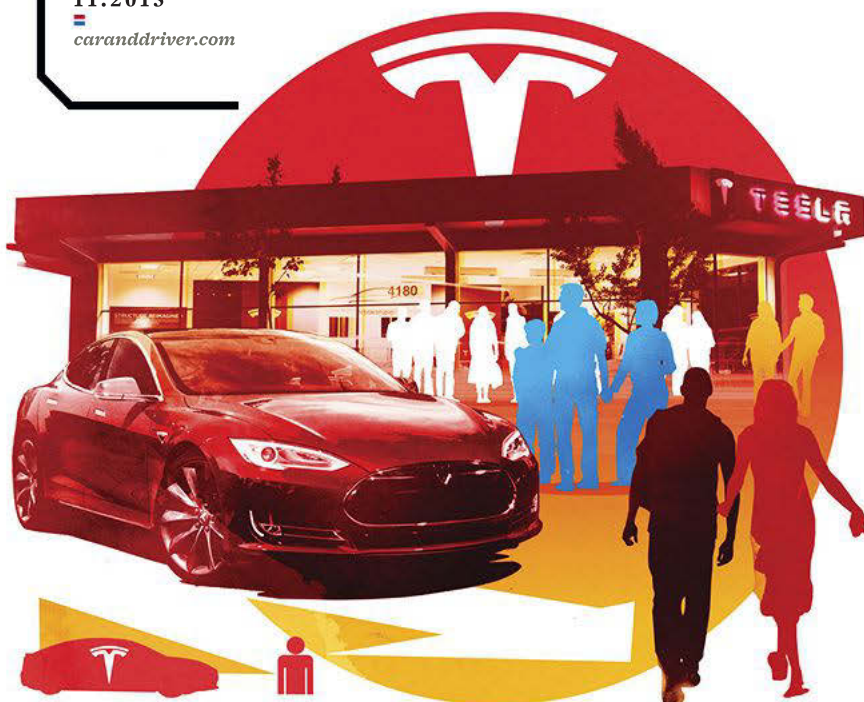
\$8.24

CHINA

\$4.10

INDIA

\$2.10



Direct Current

THE SECOND IN OUR FIVE-PART SERIES ON CAR COMMERCE SAYS: TESLA'S DIRECT-SALES GAMBIT WOULD BE NOTHING WITHOUT ITS CARS. *by James Cobb and Norman Mayersohn*

IN THE SEVEN YEARS SINCE it delivered its first EV, Tesla has managed to circumvent legal barriers to direct factory-to-consumer sales in state after state, despite concerted opposition from established dealer groups. Backed by surveys showing strong public support, Tesla chairman Elon Musk mobilized acolytes through social media, even summoning them to a public demonstration in New Jersey's capital when that state banned sales of Teslas at company stores. The effort paid off when the state Senate passed, and Governor Chris Christie signed, a bill allowing Tesla to sell cars at four locations in the state. Similar exemptions to franchise requirements, often limited to Tesla alone, were carved out in other states.

Tesla currently owns and operates 102 retail outlets in North America, almost half of which are full sales and service centers. The others are mostly retail stores, often in malls, and a few are "galleries," where discussing prices, taking orders, and offering test drives are all prohibited. The company also sells online and by phone.

Tesla insists that its desire to cut out the middleman and deal directly with customers is something noble, part of spreading the electric-car gospel. Tesla owners are often champions of the carmaker, and the company offers incentives for referrals,

another practice that troubles regulators.

Even so, other Silicon Valley innovators and free-market advocates enthuse over Tesla's retail approach, a sentiment represented by a May editorial blog post from three Federal Trade Commission directors titled "Direct-to-consumer auto sales: It's not just about Tesla." In it, they argue that "states should allow consumers to choose not only the cars they buy, but also how they buy them." The piece also notes that Elio Motors, a startup with plans to manufacture enclosed three-wheeled vehicles, intends to conduct direct sales.

But don't expect the automotive establishment to line up behind the newcomers. Analysts say there is little chance of the big car companies resuming direct sales after the withering results of their past experiments. In 1998, Ford established Ford Auto Collections in five mid-size markets, and a year later General Motors stunned dealers with a plan to set up its own network, which was to own and operate up to 10 percent of its 7700 dealerships.

In reaction, dealers rushed to state legislatures, where friendly lawmakers strengthened franchise protections in 22 states. But the company-owned networks encountered problems beyond franchise laws. Suburban dealerships undercut Ford Auto Collection's fixed prices, hurting sales at some company stores. By 2001, Ford announced that it was getting out of the retail business, and by then GM had already reversed course under pressure from its dealers.

Nobody knows better than the car-makers how thin today's profit margin is on new-car sales. It's typically a single-digit percentage of a dealership's profits, which are mostly made in service, finance, and used-car sales. Factory stores would require huge investments in land, buildings, and salaries in order to establish choice locations in the best markets. Even Tesla's hard line against independent ownership seems to be softening. Musk has said that he would consider a hybrid dealership model in the future, with the company sharing control.

Then why have dealers so doggedly fought Tesla's intrusion? Some analysts bring up the specter of China, whose car companies have threatened to export vehicles to the U.S. The present overcapacity in China's auto plants has analysts wondering where those cars will end up and how the necessary sales networks would be developed. With Tesla's foot in the door, could China's invasion with factory stores represent the ultimate existential threat to the franchised dealer? Perhaps.

But even this scenario has an analogue from the past. Daewoo, once one of South Korea's largest automakers, tried to launch its brand here in 1998 using a direct-sales model. GM acquired Daewoo after it failed, in 2002. Daewoo's demise had many causes, mainly its terrible cars. Which brings us back to Tesla's retail success, which is really based not on its distribution model but on selling what has been widely regarded as a remarkable car.

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Prototype shown with options. Production model may vary. ©2015 Toyota Motor Sales, U.S.A., Inc.

by John Phillips

👤 SILENCE IN THE GARDEN OF EVEL.



In 1966, Gay Talese wrote a story for *Esquire* called “Frank Sinatra Has a Cold.” You should read it. Talese was scheduled to interview Sinatra, but, when the time came, the singer refused to talk. So the story is an interview with no interviewee. Turns out, it was way more interesting than anything Sinatra might have revealed.

I was thinking of Talese on July 22, the day that Alicia Kniesel Vincent, daughter of Evel Knievel, explained that I wouldn’t be interviewing Robbie, son of Evel. Our back-and-forth negotiations had spanned three weeks, and the plan was that I’d maybe ride around with Robbie in Butte, Montana—“The Richest Hill on Earth” and home of all things Knievel—just prior to the town’s 13th or 14th annual Evel Knievel Days

(nobody seems quite sure). That’s where Robbie was to jump his motorcycle over a 120-foot-wide building. Simple, yes? Well, no. At the last moment, Alicia emailed to say our little drive down memory lane was off. “Robbie has no license . . . LOL!” she explained, adding that, instead of jumping the building, Robbie now would jump 26 cars. Simple, again. Well, no again.

Robbie had just received a DUI, not his first, and, according to townsfolk, could thus obtain insurance for neither jump. “He’s too upset to talk,” Alicia told me. “I don’t think it’s gonna happen.”

“I’m a frickin’ drinking, driving daredevil,” Robbie had said on *TMZ Live* in 2013. I asked Alicia to have him call me. “Any time, any place. I’ll be there in minutes.”

So I drove 140 miles and checked into the Butte Holiday Inn Express, \$213.93 per night.

“That’s evil,” I told the desk clerk.

“Evel,” she said. “Yep, ‘cause of Evel.”

I wrote three pages’ worth of questions for Robbie, loaded two tape recorders, finished reading Leigh Montville’s *Evel* bio, then sampled Butte’s best-known delicacies: a pork-chop sandwich, lodgepole sticks, and a Montana Mary (Wild Turkey, vodka, tomato juice, and beer, but nobody’s quite sure about this, either). Then I watched *Naked and Afraid* on TV, which would have been better if it were just called *Afraid*. No call from Robbie.

On Thursday, the EK Days festival commenced, featuring Pig Snout (a band), a wake-board contest in a pool you might assemble in your backyard, and the Thrillbillies Mega Ramp Show. I missed all of that. I did catch the Evel Beer Garden, however.

No call from Robbie.

On Friday, I viewed a larger-than-life-size statue of Evel pulling a wheelie but missed the RedLine Motorcycle Safety Experience, the bike parade, and Blistered Earth (a band). I did catch the Evel Beer Garden, however. No call from Robbie.

Saturday? I think it’s fair to say I missed all of Saturday. But I did bypass the Evel Beer Garden in favor of Butte’s Piccadilly Museum of Transportation—mostly license plates, street signs, and a Morris taxi that no one is allowed to touch. No call from Robbie.

To kill time, I drove to Mountain View Cemetery to view Evel’s grave. I had to hail two cemetery workers to locate the six-foot-tall headstone, which was initially laid at the Snake River Canyon in 1974, courtesy of the Rock of Ages company, “then later sort of commandeered by Evel or his family,” said one of the workers—the one who’d actually buried Evel in 2007. “You know what they say of Robbie in this town?” he asked me. “He’s what Evel deserves.” Then he pointed a couple hundred yards south to Butte’s airport, “where Evel kept his private jet,” then a couple hundred yards east to the country club, “where Evel’s house fronted the golf course. Living high right there,” he said, sweeping his hand to the southeast, “and living low right here,” he said, pointing at the grave. Around the headstone were shot glasses, cigarettes, coins, and a half-smoked joint.

“You know, I’m glad Robbie’s not jumping,” said the second worker. “The guy is 53, might kill himself. That’s not good for kids watching. Not good for EK Days.” Then he said: “I know where he is, though. He’s parked in his friend’s driveway, in his camper. Wanna go see?” Would Gay Talese have pounded on the door of Sinatra’s private Beverly Hills club? I think not. So I wasn’t inclined to pound on a camper door to roust Robbie. Instead, I drove to Evel’s former house—the ranch upon which the bank foreclosed before Evel died and the site of an 11-year-old Robbie posting a sign out front that said, “See Evel Jr. jump—25 cents.” But then two people emerged, cell-

phones in hand, glaring at me in C/D’s orange Mini Cooper S, which resembles a Halloween decoration. I glanced at my own phone. No call from Robbie.

I drove home Saturday night. As I walked in my front door, the phone was ringing, and I think I heard a voice say, “Robbie Knievel.” That was two weeks ago. I still haven’t played back the message. I’m pretty sure I never will. ■



► Evel named all his boats the “Evel Eye.” This is not one of his boats.



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European Model Shown

by Aaron Robinson

THE MARCH OF PROGRESS ALWAYS TAKES A TOLL.



There's an argument to be made that mankind should have stayed in the trees, because progress is a dangerous business. No matter how carefully you engineer a new invention and study the way test subjects use it and build in safeguards against accidental harm or malicious intent, if you start sales on Monday, by Wednesday there will be blood. The act of creation produces destruction, which produces improvement, which produces a different kind of destruction, which produces more improvement until, eventually, everybody accepts that even with things that have extensive instruction manuals and a wallpaper of warning stickers and that are widely considered perfectly safe, somebody always gets hurt. Were it otherwise, there would be no personal injury lawyers.

Back in 2012, I wrote a column entitled "Google is my co-pilot. What can go wrong?" In it, I observed that the high-tech industry plunges forward on a relentless pace of invention that generates more than its share of Version 1.0s that are easily hacked and/or don't work worth a damn. I warned that the same industry now wants to automate your car. Judging from the reader responses, in which I was called "oblivious" and a "sour puss," not everyone is dreading self-driving cars or giving much thought to the track record of the industry that is pushing them.

Okay then, how many of you want to send your kids off to school in Google Car 1.0? Anyone? History proves that some casualties from a new technology are unavoidable. But there are people who are trying to do something about it. In all likelihood, their actions will save lives.

Charlie Miller and Chris Valasek are computer hackers, an anonymous, cowardly profession not normally associated with laudable deeds. However, these two work on the security side and have applied their talents to new cars, viewing them not as automobiles but as wirelessly connected computer networks with license plates. In 2013, they sat in the back seats of a 2010 Ford Escape and a Toyota Prius and, sending computer commands through the onboard diagnostics ports, ordered the cars to commit all kinds of antisocial

behavior, including steering off the road and disabling the brakes. Of course, writes *Wired* magazine reporter Andy Greenberg, the hackers had to gain access to the car first, not a very realistic scenario.

But Miller and Valasek weren't finished. This past July, in a follow-up *Wired* feature and video, they showed how they could remotely hack a 2014 Jeep Cherokee from 10 miles away, exploiting a weakness in the car's Uconnect system, which runs on the Sprint mobile network. While relaxing on the sofa in Miller's St. Louis

living room, the duo took control of the machine with a laptop and a cellphone, turning on and off various systems and putting up a picture of themselves in track-suits on the car's center display. Eventually, they shut down the Jeep on a freeway while Greenberg, the team's panicky test bunny, tried to avoid a serious accident.

Flamers slammed Miller and Valasek for risking innocents by conducting their mayhem on public roads, which is a legitimate beef, but the stunt got people's attention. Indeed, it made the national news, and Fiat Chrysler Automobiles, which until then had been quietly offering a system patch that would have closed the loophole that allowed the hack, suddenly found itself in the glare of the media spotlight and recalled 1.4 million vehicles for software upgrades. Nothing jolts an auto company like a costly recall, especially one prompted by headlines.

Despite industry assurances of firewalls and "air gaps" that isolate the car's core systems, Miller and Valasek proved that the race to incorporate wireless connectivity is creating entry points for bad guys into the car's vital systems. It's no different than when you plugged in your first modem and went from being a private citizen in Anytown, USA, to a target visible to a global cadre of evil nerds who screw up lives for fun or profit. Now your car's steering, gas pedal, and brakes are on the web.

There is no absolute protection except to stay offline or off the road. The list grows longer of large institutions, those with budgets for serious internet security, that have been hacked silly. This past summer, the federal government had to admit that the personal information of 22 million people, including federal employees, was swiped.

It's not just our credit cards and Social Security numbers at risk; with wireless cars, our physical safety is now on the line. Miller and Valasek like to release the details of their software breaches at hackers' conventions. By feeding the wolves, they hope to spur the disorganized and perhaps naïve auto industry to unify and take the threat seriously, and also get more hackers out there trying to find the bugs.

Despite these efforts, the history of invention proves that some casualties are all but certain as cars go wireless and, someday, fully automated. Lawyers will always have work. But I, for one, sleep better knowing that at least a couple of those dudes with laptops are on our side. ■

"It's not just our credit cards at risk; with wireless cars, our physical safety is now on the line."

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PHOTO BY T. C. WORLEY

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*Government 5-Star Safety Ratings are part of the U.S. Department of Transportation's New Car Assessment Program (www.SaferCar.gov).

**Remember that even advanced technology cannot overcome the laws of physics. It's always possible to lose control of a vehicle due to inappropriate driver input for the conditions.

by Ezra Dyer

FLASHING BACK TO A BIMMER PAST.



Growing up in Maine, there weren't a lot of nice cars around. This was mainly because nobody had any money, but the dearth of zesty machinery was also a function of Yankee cultural mores, which dictate that a non-rusty Volvo 240 is the outer boundary of vehicular flamboyance. Put it this way: I still remember spotting a BMW M3 in 1995. It was in Boothbay Harbor. Avus Blue. That was the most exotic car I laid eyes on during my high-school years.

Perhaps that BMW lodged in my psyche, because soon thereafter I sold my IROC Camaro and purchased a poor man's M3. And by poor, I mean Greek government, Chapter 7, pawn-grandma's-dentures poor. The car was a 1979 Euro-market 323i crammed with a 3.0-liter dual-carb six from a

Bavaria and a five-speed from a 528i. I bought the car for \$999. (I actually paid a thousand, but when I got home I found a dollar in the glove box.) I'm not one to name my cars, but I called this one Hans.

Hans's interior was all in German, so some of the buttons and levers were complete mysteries. Sometimes the transmission thumped against the floorpan. But the biggest problem was the engine itself, which stretched from the firewall straight to the grille. A radiator was crammed in there, hanging down below the thin Euro bumper, but there was no room for a fan of any sort. Thus, you faced a situation much like Keanu Reeves's in *Speed*—you had to keep moving or it would blow up. One time a cop pulled me over just to look at the car, and when I showed him the scene under the hood, he said, "You're a braver man than I."

Little did I know then that Prestone-scented memories of Hans would boil up, two decades later, when the time came to find a ride for my 20-year high-school reunion. I definitely wanted to preen and show off, but I also wanted to reference my own past. Because at reunions, we hope for everyone to remain as we remember them, a degree or two away from the people who signed your yearbook. Carwise, then, the fitting thing for me would be an American muscle car. Or a freaky BMW.

Like I always say, when in doubt, go with the Lambo doors. Okay, the BMW i8's doors open up and out, so maybe the technical term is "dihedral" or "funky chicken," but, whatever you call them, you're making an entrance in that thing. Especially in Maine. Where I'm from, the i8 is the kind of vehicle that might prompt the citizenry to start calling in UFO sightings. "Hi, 9-1-1? I think I saw a friggin' flyin' sauceah out by Cowshit Cornah." Which, by the way, is a real place. I used to ride my bike there, and you sure knew when you were getting close.

I drove the i8 up from Boston with my friend Nobu, who was a Japanese exchange stu-

dent when we were in school. Nobu arrived our senior year and learned English from Maine high-school kids, which is one reason why he's still the only Japanese person I know who refers to seagulls as "dump chickens." Nobu was riding shotgun in the 323i on the day I hit a turtle and took out the radiator, leading to one of Hans's many trips on a flatbed. As Nobu climbed into the i8, he said, "This time, no turtles."

As if. I'm sure the i8 has a full suite of anti-reptile-shell-detection software. I mean, it has everything else: carbon-and-aluminum tub, 357-horse hybrid powertrain, bright-blue seatbelts. I may have overreached in terms of a car that would evoke my high-school self. I'm pretty sure nobody walked away at graduation thinking, "Ezra will one day return as a space-man from the future."

When I arrived at Shaw's Wharf in New Harbor, the site of the reunion, I immediately set about whoring for attention. Since I couldn't physically drive the car into the restaurant, I parked out front and affixed the license plate that once adorned the IROC: 13MTA31. The part in the middle reads "Eat Me" in your rear-view mirror. I've always been classy.

From what I could tell, the i8 was a hit. Unlike Hans, it wouldn't catch rubber in second gear (or in any gear, for that matter), but it did get 88 mpg on the way to the wharf, where it drew a steady crowd of curious onlookers. I took my friend Tony for a quick spin. Five years ago he lost his right leg below the knee in a car accident, but he seemed pretty upbeat. "I'm the only guy here who can kick his own ass!" he said, before removing his leg and doing just that.

Halo cars are often a dubious return on investment, but the i8 is perfect for BMW. It's the *ultimate* ultimate driving machine, a glimpse into another dimension. Every i8 on the road is a billboard for BMW, a screaming declaration

that this is where cars are heading and you damn well want to get on board. Perhaps the i8 doesn't have the horsepower of an M6, but I guarantee that some kid in Pemaquid saw the i8 glide past and resolved to one day own a Bimmer.

Touring my old turf made me nostalgic for Hans. Way too cool for the crusher, he's still out there, I'd bet. And whoever's behind the wheel is braver than I. ■



► Nobu and BMWs, 1995 and 2015.



THE TALE OF THE 2016 TRAVERSE

AS TOLD FROM THE SAFETY OF THE DRIVER SEAT.

We sat down with Scott Thomas, one of the inventors of the industry-first Front Center Air Bag¹ available in the 2016 Chevrolet Traverse. Scott's career in safety restraints spans more than 25 years and 50 patents. He always has customers in mind, and the Front Center Air Bag is an embodiment of his hard work.



SCOTT THOMAS

SENIOR STAFF ENGINEER,
ADVANCED RESTRAINT SYSTEMS

What sparked a need for the Front Center Air Bag?

Safety is critical to our customers and to us. This inflatable technology was developed to assist the safety belt by providing inflatable coverage to drivers and front seat passengers in far-side impact crashes where the affected occupant is on the opposite, non-struck side of the vehicle.

Why is the Front Center Air Bag so revolutionary?

It's unique. When deployed, the air bag may either help restrain the driver or cushion between occupants. What differentiates this air bag from all others is that it can position itself between the front occupants and it may also provide a level of restraint to the driver while having little surrounding surface for the bag to push against.

Why was it placed in the driver seat?

The driver seat was by far the preferred option. Other locations in the vehicle don't move or track with the driver. No matter how the seat is adjusted, the air bag remains adjacent to the driver.


How is the restraint function accomplished?

The cushion has an inflated tubular structure to resist lateral bending. No other air bag has this. It also has two tethers that help curve the cushion toward the driver to functionally catch the driver in some impacts, similar to catching a ball with a baseball mitt.

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¹ Air bag inflation can cause severe injury or death to anyone too close to the air bag when it deploys. Be sure every occupant is properly restrained.


A red Ford Mustang with white racing stripes is shown from a front-three-quarter view, driving on a road. The background is blurred, suggesting motion. The car's front grille, headlights, and bumper are visible.

POWERED BY A FLAT-
PLANE-CRANK V-8, FORD'S
OWN PRANCING PINTO
MOVES THE MUSCLE CAR
TO A HIGHER ORDER.

by AARON ROBINSON

Knocked *Flat*

photography by ANTON WATTS



FORD SHELBY GT350 MUSTANG

WE'VE BEEN HERE BEFORE. WE'VE STARED DOWN THE BARREL OF A TWIN-STRIPED MUSTANG WITH MORE THAN 500 HORSEPOWER AND THE NAME OF A TEXAS CHICKEN FARMER ACROSS ITS FANNY.

The last one, the 2013 Shelby GT500, had 662 horsepower in fact, and was said to go more than 200 mph. It didn't, not for us, anyway. Even so, it was what a Shelby Mustang should be, what it has been for decades: a hot quarter-mile with a side of smoky burnout. It was a muscle car with more. Mustang lovers got sweaty, but as usual, the rest of the auto world just shrugged and moved on with evolution.

Ford says it's different this time. It says the new Shelby GT350 Mustang, a name positively gestational with history, is a light-year leap in sophistication and handling. It says the car's flat-plane-crank V-8 delivers 8000 revelations per minute, that the magnetic dampers, the custom cross-drilled brake rotors, and the Michelin superstick tires prove that the company is serious about achieving world-class performance.

WELL, FORD SAYS A LOT OF THINGS.



Our natural skepticism, honed to a katanas's twinkle by years of Shelseys with skull-rattling rides and plodding dynamics, marched proudly into the cockpit of the new GT350—whereupon it died instantly on the car's red start button.

Vaa-ROOOOOMpapapapapapa!!!!

Okay. Maybe Ford is serious this time.

With the six-speed slotted into gear and the surprisingly light clutch pedal lifted, the GT350 leapt onto the asphalt of Monterey's Mazda Raceway Laguna Seca. First corner and first impressions: Tight, tied down, stable, maybe a little bit of push, but, hey, the car's cold and a bit heavy. Wind it out—wait, where's the redline? Nowhere. It doesn't exist! The sucker just keeps straining, keeps revving, keeps swelling with a glorious, brassy, unmuffled, rhapsodic roar.

The anticipated upshift was forgotten as another corner approached.

Brakes—oof, such brakes!—chomp down, but the nose doesn't dive. The car isn't crossed up or squirming, it's flat and stable and ready to turn *right now*. Less

understeer this time, a perfect arc scribed from white line to apex to white line. And it's on the gas again, the sound flooding back—that addictive, dazzling, erotic exhale of lyric fire.

Yes. Yes, indeed. Ford is serious.

With the \$49,995 GT350 and the even more track-ratty \$63,495 GT350R [see sidebar], Ford wants to escape the pony-car sphere that the Mustang has inhabited since 1964. Supposedly using Carroll Shel-

by's original race-ready Shelby GT350 as its guiding Polaris, the engineers set out to build a no-excuses track machine, more multitalented than the GT500 blunderbuss it replaces. That car was all about muscle, not flexibility. This one is a little lighter, a lot more lithe, and perhaps able to finally get the attention of non-muscle-car types. You say you have a BMW but want something different, possibly American-made, but a Chevy Corvette isn't your thing and a



→ The GT350 is a Mustang that even a BMW M4 owner could love. But the GT350 comes with a sweeter and more powerful engine.



Camaro Z/28 is too bestial? Ford wants to talk to you.

In the grander scheme, this is part of the internationalization of Ford's U.S. product line, from Fiestas to Transits. Today's auto-industry economics demand that you play on a world stage, which in a sporty car means world-class dynamics. The Mustang can no longer be just an island of romantic longing for drag-strip Christmas trees and fluorescent-lit drive-ins.

Okay, yes, the GT350 is North America-only for the time being, but it's mien and manners are more BMW M4 than typical monster Mustang, even if the tire-shredding line-lock feature carries over into the Shelby. Really, the Cadillac ATS-V coupe, so enriched and able, is a better comparison to the GT350 than what seems to be its natural domestic competitors, the outgoing Camaro Z/28 and, stretching the class, Dodge's Hellcat-powered Challenger SRT.

Well, the Cad is a good comparison except for the Shelby's overachieving V-8. We've complained about turbo engines and their lack of character. You want an engine with character? The GT350's "Voodoo" V-8 is Brad Pitt, the Terminator, and James Bond coming at you, armed.

EVERYBODY WANTS TO KNOW FIRST WHAT THIS 5.2-LITER, 526-hp engine sounds like. It's not a loping boom-boom like we're used to from a muscle car, but rather a faster, more syncopated thrum like what you hear from a Ferrari. Still, it doesn't sound like a Ferrari, mainly because it doesn't breathe like a Ferrari.

In case you've missed our many prior memos on the subject, here is a highly con-

↑ The V-8 is beautiful in every way, except for appearance. Something tells us the radiator support is CARBON-FIBER COMPOSITE.

densed update: This is a slightly bored and stroked version of the Mustang GT's 5.0-liter V-8 but with a flat-plane crankshaft, meaning the connecting-rod journals are 180 degrees out, like a Ferrari 458, rather than at 90-degree intervals as on almost every other V-8 in production.

The Mustang does not wail like a Ferrari, however, because Ford's engine is quite different. For one thing, it has a single intake and dual exhausts, rather than a dual intake and a single large muffler, as on the Italian. Also, rather than the Ferrari's setup of, effectively, two four-cylinder engines joined at the crankshaft, where the center two pistons of each bank are 180 degrees out from the outer two, the Ford has a different arrangement. It puts each piston 180 out from the next one in line. This is mainly because Ford wanted a single large throttle body for better packaging and a power spread more befitting a Mustang.

Ford Performance's chief functional engineer, Kerry Baldori, standing trackside at Laguna Seca and pausing to wait as each



HOW THE GT350 BECOMES THE GT350R



Go for the base \$49,995 Shelby GT350 and you get the megamotor and wider front fenders plus the redesigned Recaro seats, Michelin Pilot Super Sport tires on 19-inch aluminum rims, and a sportier suspension tune than the regular Mustang GT's. The tires are 295/35ZR-19 in front and 305/35ZR-19 in back. The \$6500 Track pack brings the MR dampers, a front strut-tower brace, firmer springs, and oil coolers for the engine, transmission, and differential. Or a \$7500 Tech package buys some of the Track pack's features plus auto climate control, navigation, and heated and cooled leather seats.

The R package adds \$13,500 to the base price and includes a firmer suspension, the Track pack plus a carbon-fiber wing and wheels (which weigh a mere 18 pounds each), and Michelin Pilot Sport Cup 2 tires, sized 305/30 in front and 315/30 in back. The R also moves some interior switches and dispenses with the back seats, the radio, and the backup camera, most of which you can add back in with a \$3000 Electronics package. Check every box—including the black roof (\$695); the extra-cost color, yellow (\$495); and “over the top” racing stripes with extra striping (\$475)—and you're at \$68,535.

A loaded GT350R is \$2200 more than a stripper BMW M4, about \$5000 more than the base price of the Cadillac ATS-V coupe, and roughly \$1500 less than the old Chevy Camaro Z/28. At the GT350's launch, Ford harped on the car's value. Considering how different it is from the regular \$37,200 Mustang GT Premium, the company has a case.



GT350 bellowed past, said the idea of a flat-plane crank happened after it was decided to replace the supercharged GT500 with a naturally aspirated V-8 in excess of 500 horsepower. Absent a blower, making that kind of sauce takes some tricks, especially if you're sticking with port injection. Ford engineers wanted to see why Ferrari and Lotus were so enamored with flat cranks. They found out. A leaner crankshaft with fewer counterweights means lower windage losses and faster wind-up. That plus some heavy work on friction reduction produced a Mustang V-8 that is the most esoteric (but also the most convincing) proof of Ford's intentions to do this one right.

No doubt, the resolve to go flat affected decisions in other departments. ("Well, if we're going to do that, then we'd better give

it good brakes," etc.) The engineers combed the internet. Ford liked Brembo's monoblock brake calipers but preferred exotic, radially pinned iron-aluminum rotors from the small German supplier SHW. The R gets 19-inch carbon-fiber wheels from Australia's Carbon Revolution, a tiny craft shop that was making its product in a pole barn before Ford Googled it. Getting small suppliers up to speed to meet rigorous original-equipment durability and quality benchmarks was a significant challenge for the program, says Baldori. The GT350R represents the first use of carbon-fiber wheels on any volume production car.

In the suspension and tires, though, Ford went with some well-known quantities. Magnetorheological technology (part

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, rear-wheel-drive, 2- or 4-passenger, 2-door coupe
BASE PRICE \$49,995-\$63,495
ENGINE TYPE: DOHC 32-valve V-8, aluminum block and heads, port fuel injection
DISPLACEMENT 315 cu in, 5163 cc
POWER 526 hp @ 7500 rpm
TORQUE 429 lb-ft @ 4750 rpm
TRANSMISSION: 6-speed manual

DIMENSIONS

WHEELBASE 107.1 in
LENGTH 188.9-189.7 in
WIDTH 75.9 in
HEIGHT 53.6-54.2 in
PASSENGER VOLUME 55-85 cu ft
CARGO VOLUME 14 cu ft
CURB WEIGHT 3700-3800 lb

PERFORMANCE (C/D EST)

ZERO TO 60 MPH 3.7-3.8 sec
ZERO TO 100 MPH 8.4-8.5 sec
1/4-MILE 12.0-12.1 sec
TOP SPEED 170-180 mph
FUEL ECONOMY
EPA CITY/HWY 14-15/21 mpg

050

11.2015

caranddriver.com

. first drive

of the \$6500 Track package on the base 350 and included on the R) makes the dampers highly reactive and tractable, giving the suspension engineers much wider latitude in the spring, shock, and anti-roll-bar tuning. And Michelin's best rubber was spec'd, including Pilot Super Sports for the GT350 and Pilot Sport Cup 2s for the GT350R.

The Mustang GT's prodigious mass—just more than 3800 pounds—was shaved from various locations, including the engine and the aluminum front knuckles. The GT350's Tremec 3160 six-speed manual, the only transmission offered, knocks a few pounds off the heavier Getrag MT82 six-speed in the Mustang GT while delivering quicker shifts. Ford quotes weights of 3655 pounds for a stripped-down GT350R to 3791 pounds for a GT350 with the Track pack.

During our day of driving on the Monterey Peninsula, we weren't able to experience the base GT350. All the cars had Track packs or were Rs. Unlike Shelybs of yore, the new GT350 on its optional MR dampers swallows the road much better, leaving

contact lenses and dentures in place. The transmission has short throws and an easy precision, and the clutch pedal's lightness means the GT350 can be an everyday elixir.

Those of you already accustomed to the sudden, explosive shove of modern turbo engines must turn back your clocks a bit. The big V-8 isn't peaky, but neither will it pull a stump at 1500 rpm. The torque curve apogees at 4750 rpm, a lofty number in these pressurized days. However, the Voodoo is more about the journey than the





← Opposite: Ford Performance swapped out the Mustang GT's Getrag manual gearbox for a lighter, better-shifting Tremec six-speed.

destination. The spin-up is an even and incredibly long crescendo of aural violence, with the real liftoff happening at 3500 rpm when the engine comes into its wind.

From there it goes. And goes. And goes. You never seem to run out of revs. On a track, that means less shifting, which means quicker lap times. Only a long-legged BMW, or maybe a turbo-free Lamborghini, offers a similar experience. This is the way performance engines used to be, not all-or-nothing boost bombs, but measured and controlled rheostats. We are likely witnessing the final opus of the naturally aspirated overhead-cam V-8. Even Ferrari has given up on it. Honors to Ford for ushering out an era with a magnificent finale.

WE SAID NO EXCUSES EARLIER, BUT THERE ARE A FEW. Ford's own version of the Michelin Pilot Super Sports is slightly conservative, with smaller tread blocks and plenty of siping. Clearly, as with the Germans who use similar versions of the Super Sport, Ford is looking for some wet-weather capability. The trade-off is some understeer when the GT350 is pushed.

Worse, the same dull steering rack as in

more menial Mustangs carries over with its leisurely 16.5:1 ratio. The electric booster has revised software maps, which are even different GT350 to GT350R, for its three driver-selectable modes, but computer coding alone can't quite cure this mass-market system with its confidence-sapping numbness. No doubt, this is the first component that the engineers would use a blank check to change.

Move up to the GT350R with its tackier tires and the understeer diminishes. Ford claims more downforce for this model than can be had in a Porsche 911 GT3. That's difficult to prove, but the R is riveted to the asphalt, its suspension digesting the various yumps and curbs of Laguna Seca with an unflappable equilibrium, its deeply bol-

stered buckets holding you fast. The brake pedal stayed firm and potent for us, but we were given only a few consecutive laps to warm it. And under orders from Ford's trackside safety boys, we could only run the car with its stability control in the track setting, not fully off. The system mostly stayed out of the picture, only coming in to modulate the throttle on the loose, bumpy Corkscrew.

We'll get a better test of the GT350R at our next Lightning Lap. Meanwhile, about 4000 or so of the GT350s and a much smaller number of the Rs will go to dealers on an annual basis. Prepare for hefty mark-ups. Except for that, this new Shelby isn't like any of its predecessors. The muscle car is finally moving on. ■



FROM TACORADO

MOUNT RAINIER



**TOYOTA TACOMA
TRD OFF-ROAD
DOUBLE CAB 4X4**

PRICE > \$37,665
POWER > 278 hp
TORQUE > 265 lb-ft
WEIGHT > 4434 lb
C/D OBSERVED MPG > 19

TO ETERNITY

—
*THE TACOMA AND THE COLORADO
DO BATTLE ALL THE WAY FROM TACOMA
TO COLORADO. by John Pearley Huffman*
—

photography by Marc Urbano

PIKES PEAK



**CHEVROLET
COLORADO LT
CREW CAB 4WD**

PRICE > \$38,720
POWER > 305 hp
TORQUE > 269 lb-ft
WEIGHT > 4474 lb
C/D OBSERVED MPG > 19



IT'S AN ON-THE-NOSE, OBVIOUS, LITERAL, AND, OKAY, SHALLOW IDEA:

Pit the transmogrified Toyota Tacoma against the fresh-enough Chevrolet Colorado during a journey from Tacoma to Colorado. Get it?

"It's pointless," mumbled senior editor Tony Quiroga as he was "volunteered" for co-driving duty on this adventure.

"It's not an adventure, it's a boondoggle," he continued. "It has nothing to do with pickups. Neither truck is assembled in Tacoma or Colorado. Tacoma is a city and Colorado is a



BIG COUNTRY

Our 1950-mile journey, mapped here. Also, thank you, carmakers, for not naming any vehicles Salton Sea or Lake Erie.

state. It'll be all droning on highways with intermittent panic stops for photos. There's no place to test and . . . hey, there's this strip-mall teriyaki joint near Yakima that's got 77 awesome reviews on Yelp!"

But Quiroga was wrong—and not just about that lousy teriyaki sinkhole he stuck us in. These mid-size 4x4 trucks are built for both mountain-goating up a rocky trail and trudging from the Morningwood Apartments to the Initech parking lot every workday. They have to carry everything a pool cleaner needs without rotting away from chlorine spills, and be comfortable enough over the hours spent searching out the perfect fishing spot along the Platte River. And they're supposed to look adorable with a pair of huskies in the bed.

IT'S HARD TO TELL, BUT THIS DUST-COLORED TOYOTA TACOMA IS ACTUALLY THE NEW MODEL. THE REFINED CHEVY COLORADO IS GRAY, INSIDE AND OUT.



With such a broad appeal and range of uses, virtually any test of these trucks has some validity. And no test can be comprehensive enough. This drive was as good a test as any other.

To some, the northwestern part of the country is where freedom reigns and herbal cultivation is a right. To others, it's where people have massive stashes of survival gear. Either way, it's a region with big spaces between pockets of civilization, inhabited by people who prefer trucks. After all, you need something to haul the freeze-dried entrees and hydroponic grow lights back to your secure compound.

So we grabbed a \$37,665 preproduction Tacoma TRD Off-Road Double Cab 4x4 short bed from Toyota's launch event near the Seattle-Tacoma International Airport, while GM liberated a \$38,720 Colorado LT Crew Cab short bed from the lot at Roy Robinson Chevrolet in nearby Marysville. Starting from the base of Mount Rainier, about an hour and a half southeast of Tacoma, and concluding at the top of Pikes Peak, just west of Colorado Springs, well, that would be more than 1300 miles by itself. But with

side trips for some light off-roading and exploration, the whole voyage would stretch beyond 1900 miles. Meaning four days of concentrated use, each day winding up with a sumptuous chain-restaurant meal and a bed at a Hampton Garden Express by Marriott. It was a great journey of discovery. Observed Quiroga: "Olive Garden's salad is always cold and crisp."

Once we crossed Washington State, most of the driving was along highways in Idaho, Utah, and Wyoming—enlightened states where 80-mph speed limits are common. Cutting across the Sawtooth National Forest on Idaho's Ponderosa Pine Scenic Byway put the trucks on curvy velveteen pavement, while the gravel trails that spider-vein off it gave us an opportunity to slide around.

After Ford dumped the Ranger in 2011 and Dodge/Ram bumped off the Dakota, and then when GM pulled the original Chevrolet Colorado and GMC Canyon after 2012, the mid-size truck segment was effectively ceded to Toyota. Sure, the Nissan Frontier and the odd Honda Ridgeline were around to pick up the scraps and the eccentrics, but it was surely the Taco's time. Toyota had every right to grow complacent as it sold 155,041 Tacomas last year. That's despite the truck having last been redesigned back in 2005.

Complacency is, however, dangerous. Despite the Tacoma's continuing success, when GM introduced new mid-size pickups last year, the result was an instant expansion of the market. The GM plant in Wentzville, Missouri, that assembles the trucks has been running flat-out while cutting back on shift breaks in a furious attempt to



TOYOTA TACOMA TRD OFF-ROAD DOUBLE CAB 4X4

➤ OFF-ROAD ABILITY, QUALITY FEEL, CARGO HANDLING MADE EASY.

❌ LOUSY DRIVING POSITION, LOW CORNERING LIMITS, A HUNT-AND-PECK TRANSMISSION. ➤ REVISED, UPDATED, AND BETTER. BUT IT'S STILL THE SAME.

squeeze out enough trucks to meet demand. We expect Chevy and GMC will sell 115,000 of these trucks in 2015. This is a real sales battle that Toyota may not have seen coming.

What's missing from both trucks is innovation. They're both still steel-bodied, ladder-frame throwbacks with solid rear axles riding on leaf springs. Both have straightforward, naturally aspirated V-6 engines. Meanwhile, up in the full-size ranks, there's more aluminum afoot, turbocharged V-6s are challenging V-8 hegemony, and the half-ton Ram rides on coil or air springs. There are opportunities for creativity here that neither GM nor Toyota is exploiting.

Sure, GM has brought a turbocharged diesel to the class, and that should be fascinating even though it only mimics what most of the world already has. But the wild card may soon prove to be Honda's upcoming Ridgeline. Also, Nissan is likely to update its Frontier soon, too, using the Navara pickup that's sold in the rest of the world as a general template.

By the time we were in the cafeteria line of rental cars and Harleys climbing Pikes Peak, it was apparent which truck we preferred. Then, as we scanned across the glorious horizon from the 14,115-foot summit, we pondered why it is that Pikes Peak, like so many other great American attractions, is crowned by a crappy gift shop.

THE TACOMA IS THE BESTSELLING NEW VEHICLE IN HAWAII. SO NO MATTER HOW WELL THE COLORADO SELLS, TOYOTA STILL OWNS THE WORLD'S MOST PLEASANT MARKET.



2. TOYOTA TACOMA TRD OFF-ROAD DOUBLE CAB 4X4

Toyota's not fooling anyone. Everybody who looks at the 2016 Tacoma sees that it's just about the same truck that Toyota has built for a decade. The revisions, updates, and fortifications that make this truck kind of new are worthwhile, but the basic suspension, chassis, cab designs, and idiosyncracies carry over intact. The character of this truck, a Camry with a rear patio, is

instantly familiar, as the rugged, indomitable, yet inoffensive soul of the mid-size Toyota pickup is the same as it ever was.

Serving this truck up in 29 flavors, two short of what Baskin-Robbins promises, Toyota has a Tacoma for every palate. This TRD Off-Road Double Cab 4x4 was keenly focused on trail busting. With its Multi-Terrain Select and Crawl Control systems, above and beyond the expected locking rear differential and electronically engaged four-wheel drive, it's overkill for anyone not chasing Al-Qaeda across the Kunar Province.





The Tacoma's nose is blockier than before, the hood riding high and flat until it steps down at the base of the windshield (the cost-effective way to raise the hoodline without changing the firewall). And under that square jaw is a new 3.5-liter V-6 that uses Toyota's D-4S combined direct and port fuel injection. Rated at 278 horsepower, it has a 42-hp advantage over the 4.0-liter V-6 it replaces, but its 265 pound-feet of peak torque is down one pound-foot. While the V-6 is available lashed to a six-speed manual transmission in some models, it will usually be paired with the test truck's new six-speed automatic.

Everything is new inside the Tacoma except the agonizingly low seating position. The floor is high, and the driver's legs are left awkwardly splayed. Throw in short bottom cushions and it's tough to acclimate to the position. Still, everything else seems nicely finished and ergonomically tolerable, even if it's not as roomy inside as the Colorado. There's a bunker feel to the interior that the Colorado avoids. The new dash design looks sweet and is simpler to read at a glance than the previous tunneled instrumentation. The Entune entertainment system sounds orchestral through JBL-branded speakers, and the navigation system is operable without a prior check of the owner's manual.

While the new V-6 is less gravelly than its predecessor, it's not quite smooth. Worse, the new transmission often irritatingly wanders back and forth from the direct-drive fourth gear to the two overdrive ratios, particularly when approaching even slight grades at high speeds. The Tacoma had but 300 miles on its clock when tested, and its 8.1-second zero-to-60 time would probably drop after some break-in. But it's unlikely to be as quick as the Chevy.

The cabin is quieter than before, and the chassis tuning is more comfortable, though the frame can still be felt twisting. Roadholding is modest (only 0.64 g on the skidpad), and the Tacoma pushes its nose through corners the Colorado handles more neutrally. That's likely attributable to the off-road-oriented tires. The Tacoma retains

VEHICLE	CHEVROLET COLORADO LT CREW CAB 4WD	TOYOTA TACOMA TRD OFF-ROAD DOUBLE CAB 4X4
BASE PRICE	\$33,430	\$34,630
PRICE AS TESTED	\$38,720	\$37,665
DIMENSIONS		
LENGTH	212.7 inches	212.3 inches
WIDTH	74.3 inches	75.2 inches
HEIGHT	70.6 inches	70.6 inches
WHEELBASE	128.3 inches	127.4 inches
FRONT TRACK	62.4 inches	63.0 inches
REAR TRACK	62.4 inches	63.2 inches
GROUND CLEARANCE	8.2 inches	9.4 inches
INTERIOR VOLUME	F: 62 cubic feet R: 45 cubic feet	F: 57 cubic feet R: 43 cubic feet
BED DIMENSIONS		
LENGTH	61.7 inches	60.5 inches
WIDTH	57.8 inches	56.7 inches
DEPTH	20.9 inches	19.1 inches
MINIMUM WIDTH	44.4 inches	41.5 inches
OPEN TAILGATE HEIGHT	34.3 inches	33.0 inches
PAYLOAD		
MAX	1590 pounds	1155 pounds
AS TESTED	1590 pounds	1120 pounds
TOWING		
MAX	7000 pounds	6400 pounds
AS TESTED	7000 pounds	3500 pounds
POWERTRAIN		
ENGINE	DOHC 24-valve V-6 218 cu in (3564 cc)	DOHC 24-valve Atkinson-capable V-6 211 cu in (3456 cc)
POWER HP @ RPM	305 @ 6800	278 @ 6000
TORQUE LB-FT @ RPM	269 @ 4000	265 @ 4600
REDLINE/FUEL CUTOFF	6500/6950 rpm	6100/6100 rpm
LB PER HP	14.7	15.9
DRIVELINE		
TRANSMISSION	6-speed automatic	6-speed automatic
DRIVEN WHEELS	all	all
GEAR RATIO:1/	1 4.06/6.3/44	1 3.60/6.3/38
MPH PER 1000 RPM/	2 2.37/10.8/75	2 2.09/10.8/66
MAX MPH	3 1.55/16.5/99	3 1.49/15.1/92
	4 1.16/22.1/99	4 1.00/22.5/110
	5 0.85/30.1/99	5 0.69/32.6/110
	6 0.67/38.2/99	6 0.58/38.8/110
TRANSFER-GEAR RATIO:1	2.62	2.57
AXLE RATIO:1	3.42	3.91
CHASSIS		
SUSPENSION	F: control arms, coil springs, anti-roll bar R: rigid axle, leaf springs	F: control arms, coil springs, anti-roll bar R: rigid axle, leaf springs
BRAKES	F: 12.2-inch vented disc R: 12.8-inch vented disc	F: 10.8-inch vented disc R: 10.0-inch drum
STABILITY CONTROL	partially defeatable, traction off	partially defeatable
TIRES	Goodyear Wrangler Fortitude HT 265/60R-18 110T M+S	Goodyear Wrangler All-Terrain Adventure 265/70R-16 112T M+S
C/D TEST RESULTS		
ACCELERATION		
0-30 MPH	2.8 sec	3.2 sec
0-60 MPH	7.6 sec	8.1 sec
0-100 MPH	—	22.6 sec
1/4-MILE @ MPH	15.9 sec @ 88	16.2 sec @ 91
ROLLING START,		
5-60 MPH	7.5 sec	8.1 sec
TOP GEAR, 30-50 MPH	4.0 sec	4.1 sec
TOP GEAR, 50-70 MPH	4.6 sec	4.9 sec
TOP SPEED	99 mph (gov ltd)	110 mph (gov ltd, C/D est)
CHASSIS		
BRAKING, 70-0 MPH	197 feet	195 feet
ROADHOLDING,		
200-FT-DIA SKIDPAD	0.73 g	0.64 g*
WEIGHT		
CURB	4474 pounds	4434 pounds
%FRONT/%REAR	57.1/42.9	56.0/44.0
GVWR	6000 pounds	5600 pounds
GCWR	12,000 pounds	11,360 pounds
FUEL		
TANK	21.0 gallons	21.1 gallons
RATING	87 octane	87 octane
EPA CITY/HWY	17/24 mpg	18/23 mpg
C/D 1950-MILE TRIP	19 mpg	19 mpg
SOUND LEVEL		
IDLE	41 dBA	41 dBA
FULL THROTTLE	78 dBA	76 dBA
70-MPH CRUISE	69 dBA	68 dBA

*Stability-control inhibited.

tested in Kent, Washington, by **TONY QUIROGA**





its hydraulically assisted steering, however, which means good feel but significantly higher effort at parking speeds. There's a pronounced step feel to the brakes, but though the Tacoma still has drums in back, it beat the Colorado in 70-to-zero braking by two feet.

With its composite inner bed and four standard rail-mounted adjustable tie-downs, the Tacoma has the Colorado covered in terms of load management. But that's not where it shines the most. Though it finishes second, the Taco's reputation is an overwhelming advantage. No new vehicle depreciates more slowly; a reasonably solid 1990 Toyota pickup still runs about \$4000 today. In 2042 or 2043 the prospective seventh owner of a 2016 Tacoma will likely look at his and conclude, "I can get another 100,000 miles out of it."

1. CHEVROLET COLORADO LT 4WD

After decades of lackluster GM compact trucks, the new Colorado is a revelation. It's quicker, more comfortable, and more refined than the Tacoma.

With its shark nose and upturned beltline, the Colorado recalls the 1967 Chevrolet C10, but without indulging in overt nostalgia. It has an easygoing personality that some buyers will prefer to that of full-size trucks, even if there's some price (and length) overlap.

CHEVROLET COLORADO LT 4WD

■ REFINED DRIVETRAIN, COMFORTABLE SEATS, WELL-MANNERED RIDE IN A GOOD-LOOKING WRAPPER.

■ UNFINISHED BED, INTERIOR PIECES LOOK CHEAP.

■ FULL OF VIRTUES NEW TO GM'S L'IL-BRO TRUCKS.



Based on GM Brazil's S10 pickup that's been around the last couple of years, the Colorado isn't small. At 212.7 inches long overall, it's a scant 0.4 inch longer than the Tacoma. Its 128.3-inch wheelbase outstretches the Toyota's by 0.9 inch. Inside, the Colorado has an advantage in almost every dimension, including head- and legroom.

Finished mostly in gray plastics, the Colorado LT's interior is unpretentious to a fault; the quality of the switches and surfaces seems cheap compared with the Toyota's. It's easy to read the main gauges, but why so chintzy-looking? Also, the screwy door pockets won't even hold an iPad Mini. (People still use those, right?) Yet, with its conventional driving position and superior seating comfort, the Colorado is clearly ahead when covering long distances.

But it's the powertrain—a 305-hp 3.6-liter V-6 mated to the 6L50 six-speed automatic transmission—that is the Colorado's single greatest advantage. It's a pairing that has proven worthy in



cars such as the Camaro and Cadillac CTS. This direct-injected V-6 is rated at 269 pound-feet of torque, only four more than the Tacoma's 3.5 V-6. The GM engine, however, peaks at 4000 rpm while the Toyota needs 4600 rpm. And the GM engine seems to make more torque just above idle.

Though the Colorado had only slightly more than 100 miles on its odometer during testing, it beat the Tacoma to 60 mph by a half second and was consistently quicker in our passing tests. But it's on the road, where the six-speed automatic transmission holds its gears more confidently, that the Colorado's virtues shine through. After 1950 miles of travel, the Colorado matched the Tacoma's 19-mpg observed fuel economy.

There's no magic in the Chevy's suspension design, which is virtually a mirror of the Toyota's. But our Colorado LT was less narrowly focused on off-road prowess than the Tacoma TRD Off-Road. And its 265/60R-18 Goodyear Wrangler Fortitude HT tires were more suited to road use than the 265/70R-16 Goodyear Wrangler All-Terrain Adventure tires fitted to the Tacoma. On the skidpad, the Colorado managed 0.73 g of adhesion but, more important, it stuck more confidently in corners. In addition, the Colorado's tires were quieter over most surfaces.

THE CHEVY'S V-6 HAS ONLY A SLIGHT POWER ADVANTAGE OVER THE TOYOTA'S, BUT WITH A GREAT SIX-SPEED, THE COLORADO IS THE CLEAR POWERTRAIN CHAMPION.



★ FINAL RESULTS

059

RANK

1 2

Maximum points available

Chevrolet Colorado

Toyota Tacoma

VEHICLE

DRIVER COMFORT	10	9	7
ERGONOMICS	10	8	8
SECOND-ROW COMFORT	5	4	3
SECOND-ROW SPACE*	5	5	4
TOWING CAPACITY*	5	5	1
FEATURES/AMENITIES*	10	10	8
FIT AND FINISH	10	9	9
INTERIOR STYLING	10	9	10
EXTERIOR STYLING	10	9	8
REBATES/EXTRAS*	5	0	1
AS-TESTED PRICE*	20	19	20
SUBTOTAL	100	87	79

POWERTRAIN

1/4-MILE ACCELERATION*	20	20	19
FLEXIBILITY*	5	5	5
FUEL ECONOMY*	10	10	10
ENGINE NVH	10	8	8
TRANSMISSION	10	10	5
SUBTOTAL	55	53	47

CHASSIS

PERFORMANCE*	20	20	18
STEERING FEEL	10	10	9
BRAKE FEEL	10	10	7
HANDLING	10	9	7
RIDE	10	9	8
SUBTOTAL	60	58	49

EXPERIENCE

FUN TO DRIVE	25	19	15
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GRAND TOTAL 240 **217** 190

* These objective scores are calculated from the vehicle's dimensions, capacities, rebates and extras, and/or test results.

Shell V-Power NITRO+
Premium Gasoline
The Official Fuel of CAR AND DRIVER

It's inexcusable that the \$38,720 Colorado doesn't come with any sort of bedliner or tie-down rail system. And though it has clever notch steps built into the rear bumper, reaching over the taller sides of the bed makes the Colorado a less congenial work-site buddy. Also, while the Tacoma has a useful 400-watt three-prong AC power port in its bed, the Colorado doesn't. That said, it's the Colorado that wins more points for its richer load of features and amenities.

The Colorado is also a better-driving and more comfortable truck, and that earns it the win. By 2040 we should know if Chevy has caught Toyota in quality, too. ■

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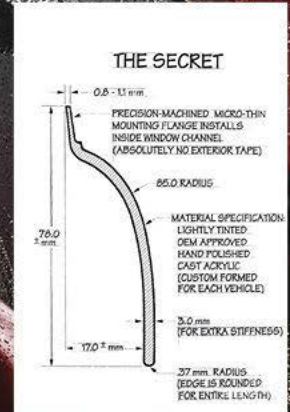
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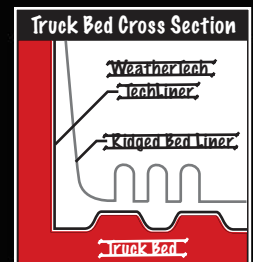
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068

. *road test*

JUMPING THE TRACKS





THE NEW COUPE AND
THE PERILS
OF INDECISION:
by Jared Gall

photography by Andrew Trihan



Imagine you're an aluminum ingot hot from the smelter, facing all future possibilities.

You could be a sheet of foil tented loosely over a platter of resting meat, or the can keeping a fistful of beer contained in the grill's hand. Maybe you'll be the child's bat pinging a line drive through his window, or a spar in the wing of the Airbus tattooing the blue sky high overhead.

Or are you a gearhead? Sorry, you can't actually be a gear—most of those jobs go to steel. But you're needed desperately elsewhere. Engine parts, structural elements, and suspension components have all been cast, extruded, and forged from aluminum for the sake of weight reduction. Or maybe you're an aesthete, and you'd like to be stamped into a body panel. If you work your way into an Audi TT, you could find meaning in any of these roles. The all-new 2016 TT is the third generation of Audi's architectural hatchback, and, as before, nearly all of its metal bits—upper body structure, side frames, fenders, doors, hood, roof, hatch, and bumper beams, plus assorted engine and suspension parts—are aluminum. The materials mix shifts around a bit for gen three, though, with steel now used for the engine cradle, floorpan, and firewall. That helps keep weight to 3167 pounds, 25 less than the previous car and 242 less than a similarly sized Volkswagen Golf R, which shares a platform with the TT and similarly packs a turbo 2.0 and four-wheel drive.

Powering the new TT is the Volkswagen Group's redesigned EA888 2.0-liter four-cylinder, which retains the EA888 name but little else aside from bore and stroke. It's built around a 72-pound iron block that is one of heaviest single pieces of ferrous metal in the car. Integrating the exhaust manifold into the aluminum cylinder head helps the engine get up to operating temperature quickly, reducing startup emissions. In European applications, this engine gets both direct and port fuel injectors, the latter to better mix fuel and air to hit

specific emissions targets. But here in the U.S., where our exhaust requirements are different, it's not a concern worth the investment, and our TTs are DI only.

But it's still unmistakably the Wolfsburg turbo 2.0, sounding and responding like the engine we've experienced in a succession of VW products. Floor it from a stop and there's a slight delay before its 258 pound-feet of torque peaks at 1600 rpm, and then power piles on smoothly until all 220 horsepower manifests at 6200 rpm. For a car with such an unremarkable power



rating, the TT's performance is impressive: zero to 60 mph in just 5.2 seconds, with the quarter-mile taking 13.8 seconds at 99 mph. That's 0.6 second quicker to 60 and 0.6 second more fleet through the quarter than a GTI. Switch the exhaust to dynamic mode, and a sound actuator gives the impression of a deeper exhaust rumble.

Shifts from the dual-clutch gearbox are faster and smoother than those of most traditional automatics, and kickdowns are instantaneous. Even in manual mode, flooring the accelerator produces a sixth-to-second downshift as fast as a rifle shot. Presently, the only way to get a TT in the U.S. is with DSG and Quattro.

If the TT's straight-line figures are on the verge of sports-car speed, its braking and roadholding are legitimate sports-car performances. And the sensations associated with them are nearly as impressive. Brake feel is excellent. The pedal travels a touch too much, but pressure is consistently firm once the stopping starts. A



↑ Above: The TT's clever and obsessively detailed HVAC vents might be the year's most unexpected engineering triumph.

70-to-zero braking distance of 151 feet betters the 10Best-winning BMW M235i, as well as one of the M4s we've tested. As does 0.98 g on the skidpad. Audi's Drive Select system tweaks steering effort, engine sound, four-wheel-drive engagement, and throttle and transmission mapping. In either comfort or dynamic mode, the steering is linear, progressive, and weights up beautifully. It's breezy and light in comfort, and barbell-heavy in dynamic.

With the shortest wheelbase of any car yet built on Volkswagen's super-versatile MQB platform, the TT changes direction quite well for a four-wheel driver. The Quattro system can direct 100 percent of engine torque to either the front or rear axle, and switching the system into dynamic mode biases that output to the rear. Under even light throttle (cornering), Quattro directs torque aft, relieving pres-

sure on the nose and allowing the TT to rotate readily. One thing we wish Drive Select could alter is suspension response. (Adjustable dampers will be standard on the forthcoming TTS.) With our car's optional 19-inch wheels (\$1000), the ride was fairly harsh, though not unduly so for a car with handling this direct.

We will now switch gears and rant until we're blue about the TT's fancy new infotainment system. Cleverly designed to cut the passenger out of the equation entirely, it does away with the central display screen, replacing it with three air vents and one large, reconfigurable panel in front of the driver. There are no mechanical gauges anymore, just a digital tach and speedometer that can shrink as necessary to allow other displays—radio, media, navigation, vehicle settings, and telephone—to take up an inordinate amount of space and driver attention.

The driver manipulates these various functions using steering-wheel controls.

The passenger can manage them using the central MMI knob and some buttons but can't see the screen, so there's little point. Proving how much Audi wants the driver to keep hands on the wheel and use the controls there, the redundant volume knob is positioned just out of reach, in front and to the right of the shifter. Here, though, it is optimally, patronizingly placed for the passenger. (*You want something to do, Bradley? Fine. Control the volume.*)

On Audi's website, we came across a plug for the system, promising that it would allow the driver to "be informed, not overwhelmed." Putting four gauges and more than a dozen different icons on one screen, giving the driver some 20 separate things to look at, doesn't seem like the best way to accomplish that. Just two years ago, we called Audi's MMI the least frustrating, most user-friendly infotainment system in the entire industry ["Doing IT Right," January 2014]. As much buzzword momentum as the phrase "distracted driving" has



AUDI TT 2.0T QUATTRO

- Excellent steering, roadholding, and braking; impressive acceleration with just 220 horsepower.
- ❑ Infotainment betrayal of the highest order, timid styling, GTT's engine is less endearing at 50 grand.
- ❑ A sporty coupe that falls short on the sensations that make a sports car.

amassed, it seems few automakers are actually doing anything to combat it. And by assigning sole responsibility for these secondary systems to the driver, Audi seems to be asking the chain-saw juggler if he can't also tune the carburetors while he's at it.

At least the air vents that replace the infotainment screen are lovely, although they, too, are wildly complex. Some companies publish exploded imagery to show the various components of their body structures or engines. Audi released a rendering of an air vent exploded to show the 20 or so different parts in each. All the HVAC controls are nested inside the vents. You adjust temperature by turning the knob in the middle of the center vent, and you push it to engage the automatic setting. The knob on the leftmost of the three vents controls fan speed. The knob on the right vent selects air distribution. Both driver and passenger have an outboard vent on the dash near the door handle. Pushing the button in these activates the seat heater. It is a complicated but clever and tidy way to package HVAC controls, and the vents and knobs are satisfyingly graduated and hefty (not unlike our nephew, who mercifully got that wrestling scholarship to Central).

Otherwise, the TT's airy interior is restrained, bordering on the bland—a particular disappointment considering that the first-generation TT touched off a cabin-design renaissance, going so far as to offer baseball-glove stitching on its seats. With a row of toggle switches low on the dash and

its clever circular vents, the TT's interior reminds us of a German Ford Mustang. It's rendered almost exclusively in a black rubbery material that would be pleasant to plant your face into during a vigorous front-end impact but isn't otherwise noteworthy. At least the sport seats (another \$1000 option) are supremely comfortable.

We're similarly lukewarm on the car's exterior. The first TT was groundbreaking, unlike anything we'd seen before except maybe in futurist sketches of a reborn Porsche 356. Then the second one was, well, kind of like the first one, but not as shocking. This third generation just looks as if Audi replaced some radiused curves with kinks and called it a day. Unless you park it next to its predecessor, telling them apart is tricky. The TT used to be automotive sculpture; now it's a small, chunky R8 clone. It's still pretty and sports some nice detailing but no longer invites the sort of stares the original did.

Indeed, we found ourselves feeling somewhat detached from the TT as a whole. It's a comfortable and capable sports coupe, but it doesn't offer holistic driver engagement. An example: We're accustomed to this engine impressing in more-affordable cars, where it feels like an overachiever. In this context, though, it lacks the personal-

ity and immediacy of a suitably premium engine, say BMW's straight-six or even Ford's 5.0-liter V-8—just two alternatives available near the TT's base price of \$43,825. With options, our tester climbed to \$50,600, at which point buyers looking for something thrilling could be tempted to stretch another few grand for a Corvette.

And while the TT's chassis improvements are impressive, with this base car outcornering and outraking even the old TT RS, the car itself feels aloof. Despite excellent steering and body control, the data broadcast to the driver's backside is dominated by reverb from the stiff suspension and large wheels. It's so stable and planted that it needs more power to come alive and dance. The TT's additional 72 horsepower and 22 pound-feet of torque should achieve that, but, despite its looks, a mini R8 this is not. In fact, we're not quite sure what the TT wants to be.

One day, this aluminum ingot may be ground up, melted down, and re-formed into other stuff—maybe several hundred very handsome soup ladles. Meanwhile, it's no longer serving as the fashion accessory it once was, nor, in this configuration at least, as a true, premium sports car. For now, it's just a fastidious aluminum dumping—one rife with possibility.



THE PHANTOM ROSE GOLD

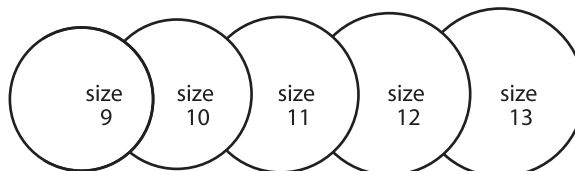
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Phantom Watch \$199 Phantom Ring \$129 Set Price \$289 (Save An Extra \$39) + S&P

The Daniel Steiger Phantom Rose Gold. Engineered from premium grade 316L steel and plated in a mixture of rose gold and black IP, the words designer styling really could have been invented for this timepiece. A precision chronograph movement featuring 24 Hour, Stopwatch Seconds & Minutes sub-dials and date window are displayed on the multi-levelled face. Now available direct from the manufacturer at the astonishingly low price of \$199 - a saving of \$596 on the retail price of \$795. So how can we make an offer like this? The answer is beautifully simple. We have no middleman to pay, no retail overheads to pay and not the usual mark-up to make, which on luxury items can be enormous. To accompany the Phantom, we have introduced the Phantom ring. With layers of rose gold plated steel and an impressive row set with our flawless Diamondeau gems, that can cut glass like a mined Diamond.

RING SIZE CHART

Place one of your own rings on top of one of the circles to the right. Your ring size is the circle that matches the diameter of the inside of your ring. If your ring falls between sizes, order the next larger size.



SPECIFICATIONS

Premium grade 316L stainless steel
Two-tone rose gold and IP black finish
Precision chronograph movement
5 year unlimited movement warranty
Magnificent presentation case

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road test

AUDI TT



▼ SPECIFICATIONS

PRICE

AS TESTED \$50,600
 BASE \$43,825

VEHICLE TYPE: front-engine, 4-wheel-drive, 4-passenger, 2-door hatchback

OPTIONS: Technology package, \$3250; S Sport Seat package, \$1000; 19-inch wheels and summer tires, \$1000; Bang & Olufsen sound system, \$950; metallic paint, \$575

STANDARD: power windows, seats, and locks; remote locking; cruise control; tilting and telescoping steering wheel

AUDIO SYSTEM: satellite radio; CD player; minijack, 2 USB, 2 media-card, and Bluetooth-audio inputs; 12 speakers

ENGINE

turbocharged and intercooled inline-4, iron block and aluminum head

BORE X STROKE 3.25 x 3.65 in, 82.5 x 92.8 mm

DISPLACEMENT 121 cu in, 1984 cc

COMPRESSION RATIO 9.6:1

FUEL DELIVERY SYSTEM direct injection

TURBOCHARGER IHI IS20

MAXIMUM BOOST PRESSURE 17.2 psi

VALVE GEAR: double overhead cams, 4 valves per cylinder, hydraulic lifters, variable intake- and exhaust-valve timing and intake-valve lift

REDLINE/FUEL CUTOFF 6750/6750 rpm

POWER 220 hp @ 6200 rpm

TORQUE 258 lb-ft @ 1600 rpm

DRIVETRAIN

TRANSMISSION ... 6-speed dual-clutch automatic with manual shifting mode

FINAL-DRIVE RATIO 4.77:1, 3.44:1*

4-WHEEL-DRIVE SYSTEM full time with automatic rear-axle engagement

GEAR	RATIO	MPH PER 1000 RPM	MAX SPEED IN GEAR (rpm)
1	2.92	5.3	36 mph (6750)
2	1.79	8.7	59 mph (6750)
3	1.19	13.2	89 mph (6750)
4	0.83	18.8	127 mph (6750)
5	0.86	25.0	128 mph (5100)
6	0.69	31.5	128 mph (4050)

CHASSIS

steel and aluminum space frame with a rubber-isolated rear subframe

BODY MATERIAL: aluminum stampings

STEERING

rack-and-pinion with variable electric power assist

RATIO 14.6:1

TURNS LOCK-TO-LOCK 2.0

TURNING CIRCLE CURB-TO-CURB 34.8 ft

SUSPENSION

F: ind, strut located by a control arm, coil springs, anti-roll bar

R: ind, 1 trailing arm and three lateral links per side, coil springs, anti-roll bar

EXTERIOR DIMENSIONS

WHEELBASE	98.6 in
LENGTH	164.7 in
WIDTH	72.1 in
HEIGHT	53.2 in
FRONT TRACK	61.9 in
REAR TRACK	61.1 in
GROUND CLEARANCE	4.8 in

INTERIOR DIMENSIONS

SAE VOLUME	F: 47 cu ft R: 27 cu ft
CARGO	12 cu ft

BRAKES

F: 12.3 x 1.0-in vented disc

R: 11.8 x 0.5-in disc

STABILITY CONTROL fully defeatable, competition mode, launch control

WHEELS AND TIRES

WHEEL SIZE/CONSTRUCTION 9.0 x 19 in/ forged aluminum

TIRES Bridgestone Potenza S001 245/35R-19 93Y

★ NOTABLE HIGHLIGHTS

Audi assured us that none of the TT's aluminum body members carry a load, despite supposedly belonging to the unibody-based MQB family. We're calling the TT a space frame here, but Audi blurs the difference between classic unit-construction and space-frame designs.

CAR AND DRIVER TEST RESULTS

ACCELERATION

ZERO TO	SECONDS
30 MPH	1.7
40 MPH	2.7
50 MPH	3.8
60 MPH	5.2
70 MPH	6.7
80 MPH	8.7
90 MPH	11.2
100 MPH	14.1
110 MPH	17.8
120 MPH	22.6
ROLLING START, 5-60 MPH	6.6
TOP GEAR, 30-50 MPH	3.2
TOP GEAR, 50-70 MPH	4.0
1/4-MILE	13.8 sec @ 99 mph
TOP SPEED (GOV LTD)	128 mph

■ **TEST NOTES:** Launches softer than expected. Not a lot for the driver to do thanks to launch control, but the TT gains a few tenths when releasing the brakes as the revs climb toward the 4000-rpm launch point, as opposed to letting the revs hold there for a second or two.

HANDLING

ROADHOLDING, 300-FT-DIA SKIDPAD 0.98 g
 UNDERSTEER MINIMAL

■ **TEST NOTES:** The chassis transitions from firmly planted to sliding off course with little warning. As long as you stay below the limit, grip is strong and throttle manipulation dictates direction.

BRAKING, 70-TO-ZERO MPH

FIRST STOP	150 ft
SHORTEST STOP	151 ft
LONGEST STOP	154 ft
FADE RATING	NONE

■ **TEST NOTES:** Like a lot of other four-ringers we've tested of late, there is a soft spot in the first few inches of pedal travel. The initial braking force feels stronger than the 151-foot stopping distance indicates. At least it feels that way from the seat of the pants.

WEIGHT

CURB	3167 lb
PER HORSEPOWER	14.4 lb
DISTRIBUTION F: 59.1% R: 40.9%	
CENTER-OF-GRAVITY HEIGHT	19.5 in
TOWING CAPACITY	0 lb

FUEL

CAPACITY	14.5 gal
OCTANE	91 (recommended)
EPA CITY/HWY	23/30 mpg
C/D OBSERVED	24 mpg

INTERIOR SOUND LEVEL

IDLE	45 dBA
FULL THROTTLE	77 dBA
70-MPH CRUISING	72 dBA

tested by K.C. COLWELL
 in Chelsea, Michigan



▼ COMPETITORS

AUDI TT (2.0-L I-4, 220 HP, 6-SP AUTO)

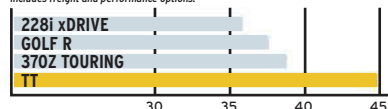
BMW 228i xDRIVE (2.0-L I-4, 240 HP, 8-SP AUTO)

VOLKSWAGEN GOLF R (2.0-L I-4, 292 HP, 6-SP AUTO)

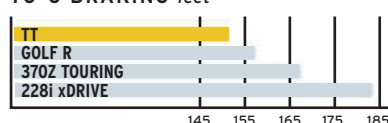
NISSAN 370Z TOURING (3.7-L V-6, 332 HP, 6-SP MAN)

CURRENT BASE PRICE dollars x 1000

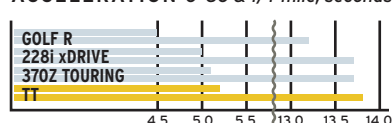
Includes freight and performance options.



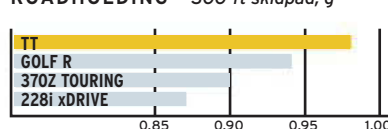
70-0 BRAKING feet



ACCELERATION 0-60 & 1/4-mile, seconds



ROADHOLDING 300-ft skidpad, g



Shell
V-Power
NITRO+
 Premium Gasoline

The Official Fuel of
 CAR AND DRIVER

*The first ratio is for gears 1-4, second for gears 5 and 6.

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Morgan Plus 8

PRICE > \$112,444 (U.K.)
POWER > 362 hp
TORQUE > 361 lb-ft
WEIGHT > 2550 lb

McLaren P1

PRICE > \$1,150,000
POWER > 727 hp (engine)
POWER > 177 hp (motor)
TORQUE > 531 lb-ft (engine)
TORQUE > 96 lb-ft (motor)
WEIGHT > 3300 lb

Ariel Atom 3.5R

PRICE > \$96,850 (U.K.)
POWER > 350 hp
TORQUE > 243 lb-ft
WEIGHT > 1350 lb

BRITAIN'S MOST BRUTISH

feature . *BLIGHTY'S
QUINTESSENTIAL
SPORTS CARS
STORM THE
ISLE OF MAN'S
UNLIMITED
ROADS.*

by Aaron Robinson

*photography by
James Lipman*



T

he Irish used to say that Finn MacCool, their own Paul Bunyan, was throwing mud at some Scot giant one day and overshot, creating the Isle of Man. Today, it's more often referred to as "80,000 alcoholics clinging to a rock." Situated in the Irish Sea, roughly halfway between Belfast and Liverpool, it is 221 square miles of pastureland, forest, and grassy mountains, 33 miles at its longest and 13 miles at its widest. The Romans civilized it, then the Vikings sacked it, and while the buck now stops at Queen Elizabeth II, the Isle of Man makes its own rules as a "Crown dependency."

Things are a bit strange, starting with the rudderless cats and the language, a slouchy version of Gaelic called Manx. The island issues its own currency, the Manx pound, with the 20-spot bearing what seems to be a miniature likeness of Elvis, and its triskelion logo of three pinwheeling legs means, as one local told us, "you can push us but we'll always keep standing." About a third of the roads have no speed limit, and handguns are legal, with 18,000 registered. The Isle of Man is, basically, what Texas wants to be.

It is exactly because of this pugnaciously independent streak that the Tourist Trophy motorcycle road race, the celebrated TT (a.k.a. "the Manx"), continues. Hemingway said there are only three sports: bullfighting, motor racing, and mountaineering. The TT is all of the above. The 37.7-mile Snaefell Mountain Course of public roads has 264 corners and an elevation change of 1400 feet, the riders flashing mere inches from hedges and trees and stone walls, sometimes in the air or on one wheel. Brit John McGuinness set the course lap record this year, averaging 132.7 mph. Sure, this year's Le Mans winners turned a lap averaging 153 mph, but those guys were in cages.

Bike racing is a daredevil business, but even so, the TT is exceptional. With 92 contests over 104 years, the TT has amassed a startling fatality count. Five deaths in 2014 and one this year elevated the total to 246 riders killed in the TT, almost five times the number of fatalities from the equally old Indianapolis 500. And that's not counting those lost to the event's "Mad Sunday," when the Mountain portion of the circuit opens to civilian "one-day wonders."



ONE-THIRD OF THE ROADS ON THE ISLE OF MAN HAVE NO SPEED LIMITS, MAKING IT BRITAIN'S BEST PLACE TO TEMPT FATE IN THREE OF THE COUNTRY'S MOST EXTREME MACHINES.



In planning our automotive raid of motorcycling's scariest and most sacred venue, we drew a triangle to represent the three historic character traits of the British sports-car industry. At the top, we put advanced technology derived from racing, an industry so concentrated in Britain that from one pastoral hill in Oxfordshire you can see five Formula 1 teams' headquarters. The hybrid, carbon-fiber McLaren P1 was the obvious choice.

From the MG Midget to Colin Chapman's delicate skulls, the Brits have always celebrated elementalism, or the parboiling of a sports car down to its bare essentials. Few would argue that the 350-



HEMINGWAY SAID THERE ARE ONLY THREE SPORTS: BULLFIGHTING, MOTOR RACING, AND MOUNTAINEERING. THE ISLE'S TOURIST TROPHY RACE IS ALL OF THE ABOVE.



hp, 1350-pound, \$96,850 Ariel Atom 3.5R isn't a worthy inheritor of that legacy.

Then there is that distinctly British obsession with the past. Henry Morgan started making three-wheelers in a Malvern long building in 1914 and the craftsmen are still there, plink-plinking the cars together with calloused hands. Ash-wood body framing and cycle-fender styling that has barely changed since 1936 means no British company trades on heritage more than Morgan. A 362-hp BMW-powered Plus 8 automatic was offered.

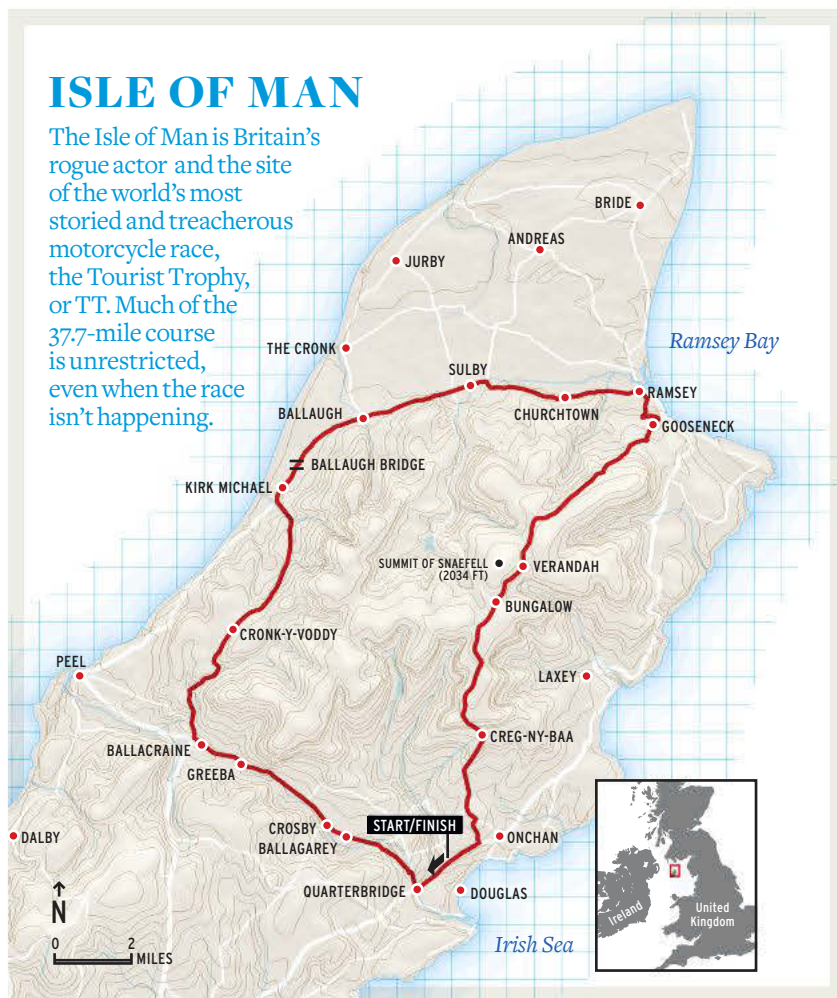
From Liverpool, we catch the three-hour Isle of Man Steam Packet (or "Steam Racket," as Brits have dubbed the ferry monopoly for its prices) to Douglas. A gale makes the journey nauseatingly rough, and the catamaran is thoroughly perfumed with barf as we inch the low cars down the ramps and head for our inn at Sulby. The décor there is all TT, a wallpaper of photos of bikes and bike heroes. Sulby Straight is the longest on the course, and at race time, the fastest bikes shriek past the pub door at more than 200 mph.

In the morning we head down the arboreal country lane toward Ramsey near the island's north tip, getting in line during the fast-flowing rush hour. The well-used artery seems horrifically bumpy in places, and the seasoned bike racers know to let their machines move around to seek their own path.

By distilling the British motoring industry's best qualities into three vehicles, we have ended up with three extremists, headlined by the inscrutably futuristic—and sold-out—\$1.15 million McLaren. Packing batteries and an electric motor that alone can

ISLE OF MAN

The Isle of Man is Britain's rogue actor and the site of the world's most storied and treacherous motorcycle race, the Tourist Trophy, or TT. Much of the 37.7-mile course is unrestricted, even when the race isn't happening.



propel the car to a quiet 100 mph, our murderously black 15,000-mile development car has a bit of squeaking patina but still offers the full "Am I really doing...?!" bushwhacking when all 903 hybrid horsepower are uncorked.

A P1 rookie feels like a caveman dropped into the MIT laser lab. After a few miles, however, perplexity gels into permanent awe. The wraparound cone of windshield glass that leaps the door pillars and extends to the sides and roof reminds you of that in-car Porsche 956 film from Le Mans. Instead of Derek Bell, however, it's you, Mr. Rich Guy, experiencing the unholy ass kicking. The P1's wailing acceleration matches a sport bike's, and Manx's walls and tunnels of trees melt into a verdant blur when you goose it.

We follow the permanently striped curbing through Ramsey's Parliament Square and Cruickshank Corner, and then start climbing the Mountain. The old whitewashed buildings of Ramsey and the lapping Irish Sea fall away, looking like something out of a Robert Louis Stevenson novel. The bikers drag their knee pucks ascending through these switchbacks.

The skeletal Atom, wind rustling through its open trusses, the tires throwing stones and water from puddles in the face of its helmeted driver, creates a sense of being part of a rushing and potentially painful world, thus coming closest to being like a motorcycle. Everything feels firm, from the hard-shell seat and five-point harness to the rigid suspension to the





THE ATOM LOOKS A BIT SILLY AND FEELS NERVOUS TRUNDLING THROUGH TOWN. THE P1 POODLES ALONG MORE COMFORTABLY THAN A SPACESHIP SHOULD. THE MORGAN REMAINS A MORGAN.



steering, which is heavy and alive. The front tires have their own mind, like a TT bike chasing the contours in the road, wanting to find their own way. You're terrifically fast and sticky, but you're always a little unsure. Will it snap into oversteer or just slide laterally into someone's front parlor?

Also like a motorcycle, the six-speed gearbox is sequential, controlled by paddles that operate a pneumatic gearchange system. It sounds just like a nail gun as it poot-poots the smacking ratio changes. The brakes are firm, but the car is only half as good at slowing down as it is at accelerating (again: bikelike).

Riders say it takes three years to learn the TT course. More than a thousand feet above the sea, they are certifiably hauling past the Stonebreakers Hut, grabbing gears deep into triple digits. The McMental McLaren tops 150 mph here, roaring past civilians in Nissans and VWs. Nowhere else in the speed-camera-besotted British Isles can you go so fast without risking your license. The P1 does it effortlessly, but also enthrallingly.

The Morgan is just the opposite. After the P1 and the Atom, it's like an English setter snoozing at your feet. It feels as if it won't start unless you're wearing Harris Tweed. A BMW V-8 purrs out the power, though the exhaust can turn hard and blatty when you mat it. It can go quickly through a corner, guided by gratifying steering as the long nose in front of you tracks a clean line, but it prefers to waft at a moderate pace.

Through the circuit's Gooseneck and Gob-ny-Geay turns, the Morgan shows cool dexterity even as it struggles to keep pace with

POLICING ROADS WITH NO SPEED LIMITS

Detective Sergeant Allan Thompson, head of the Isle of Man Constabulary's road unit, doesn't like writing tickets, and indeed, often he can't.

"We're unique in that we have roads without speed limits," he says in his native Liverpool accent. "You can get off the boat and go up onto the Mountain course and be doing 180 mph within 15 minutes without breaking the law. That's why we want to try and engage with people and talk to them. Treat them appropriately and make them behave better."

Thompson, 46, a 26-year veteran, has a team of five constables that increases to 22 during TT week. He meets us outside police HQ in Douglas in a new Ford Focus ST wagon, one of the island's few dedicated interceptors. "You definitely need a car you can make ground in, but you'll never be as fast as some of the bikes. You can be driving at 100 mph with the lights and sirens on and there will be bikers whistling past."

When Thompson took over the job three years ago, the emphasis was still on old-fashioned enforcement: speed traps. He changed that. "The old culture was to put everybody in the book, not to ask questions or even to find out their story. We used to do speed traps on the exit of villages, when people are already excited and starting to go faster. I moved them to coming into villages, so people could see why we were doing it, and we started trying to engage with people more."

The number of speeding convictions plummeted, as did crashes and hoonery. Be fair, Thompson believes, and the public responds. This is indeed a strange place. —Mike Duff



the hyper McLaren and Ariel. Our resident Brit, Mike Duff, lapses into Edwardian fogginess whenever he drives it, shouting things such as "Tally bally ho!" and calling people "Old Stick." He has christened our car Sir Moggy of Mogalot.

We stop at a cutoff—what the locals call a lay-by—to drink in a view of a green chasm crisscrossed by stone walls and dotted with the white cotton balls of grazing sheep. The section is called Verandah, and it's where local boy Conor Cummins dropped his Kawasaki in 2010 and slid off the mountain, bouncing off a rock wall. The TT can run up a sickening butcher's bill: Cummins's back was broken

in five places, his upper arm in four places, and he had a fractured pelvis, a shattered knee, a broken collarbone, and nerve damage. But a year later, he was racing again.

Hand built doesn't always mean well built, Duff points out, and the Morgan is a comedy of near-errors, from the way the front wheels scrape the body at full lock to the flimsy top and triple wipers, neither of which works well in actual weather. The occupants are tucked into cozy pockets, but the cut-down doors make them feel like the top hoops in a roll cage. Perhaps that's why Morgan drivers lean into the windscreen, looking (and feeling) like Royal Air Force pilots diving on Dunkirk.

A tourist tram crosses the road on its way to Snaefell's 2034-foot summit. There, we pass under the statue of Joey Dunlop, who won the Manx 26 times. He crashed



What owners say about V1...



★★★★★ Bill P., Phoenix, AZ

Where's the radar? An arrow lights up, pointing either Ahead, to the side, or Behind. And, amazingly, it's never wrong.



★★★★★ Arnie R., Atlanta, GA

So easy to operate, a box with one knob. No need to poke around at full-arm's reach for little buttons the size of rice grains.



★★★★★ Glenna R., Dallas, TX

Love the arrows! Where's the radar? They tell me every time. How come no other detector thought of that?



★★★★★ Chas S., Charlotte, NC

Situation Awareness you can trust. With the Radar Locator arrowing toward threats, and the Bogey Counter telling how many threats you face, V1 makes defense easy.



★★★★★ Cal L., Trenton, NJ

I've owned my V1 since 2001, and I've had it upgraded twice. I trust the arrows to point out every radar trap. When I know *where*, I know how to defend.



★★★★★ Ed H., Las Vegas, NV

How can anyone not be smitten by the Arrows? Radar ahead needs a different defense than radar behind. When I know where, I know what to do. And I can tell when I'm past the threat, too. All other detectors just *beep* and keep you guessing.



★★★★★ Rob R., Sacramento, CA

This is the slam dunk best radar detector. No databases to keep updating, or other "features" I'll never use. Instead V1 tells me the important stuff—the Bogey Counter tells you how many threats within range and the red arrows tell where they are.

Trust...V1 earns it one ambush at a time.



★★★★★ Harold B., Houston, TX

On my way home this afternoon I was following another detector user. I could see red blinking in his windshield as we went past the first radar. Thinking the danger was behind, Mr. Ordinary Detector User hit the gas.

Uh-Oh. V1's **Radar Locator** was showing two arrows, one pointing toward the trap now behind, and a second arrow ahead. The "2" on the **Bogey Counter** confirmed we were being double teamed.

Sure enough, Mr. O. D. User cruised into the second trap up the hill at 15 over and got himself a blue-light special.

V1 points to *every* trap. I **trust** it completely.

Bogey Counter

Tells how many:
Radar hiding within a false alarm? Two radars working the same road?
Reads instantly.

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Tracks one or more radars at the same time; points to each.



Rear Antenna

Scans behind for radar.



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fatally in a race in Estonia in 2000, and now his bronze likeness sits astride his bike in the whistling winds of the Mountain.

We descend through Creg-ny-Baa corner past the inn where patrons lounge on the porch at TT time, watching the zooming bikes in delightful inebriation. From there it's the old Victorian seaside capital of Douglas and the start-finish line on Bray Hill, which sits rather ironically adjacent to a sprawling cemetery. The memorial wall for deceased racers includes Irishman Gene McDonnell, killed in 1986 when a horse spooked by a helicopter jumped a fence and ran up the course.

For such a potent supercar, the P1 poodles complacently in heavy truck traffic down Bray and through the right-hander at the Quarterbridge roundabout that sends riders screaming west along the bottom of the circuit. They pass gas stations and industrial parks and small cottages, through shivering flickers of sunlight and shadow, the faces of spectators just a rapid tracer fire of cream-colored pixels. People still talk about Guy Martin's 2010 crash here at Ballagarey—the riders call it Ballascarey—when his 1000-cc Honda emerged from the 170-mph blind right-hander as a tumbling fireball. The corner has killed its share, but the toothy Martin survived to become a reality-TV star.

Like a bike, the Atom is vibrating and pulsing, its 8400-rpm supercharged Honda occasionally backfiring on a downshift like a Remington .30-06. It wants to be on a track and reminds you of that

with a darting nervousness over patchwork pavement. The miniature windscreen provides a surprisingly good weather break, some comfort on an island that can experience all four seasons at once. Driving the intensely physical Atom while it's pissing rain feels like working a crab boat in an Alaskan storm.

The riders lean hard right at the pink house at Ballacrairie and head north under a twisting and undulating canopy of trees, a lovely and bucolic passageway to more-dangerous sections of the course. The \$112,444 Plus 8 has the aluminum chassis of the more modern Aero 8 and shines in this relatively smooth section, the top down and the foliage ruffling by overhead. As the garden walls and cottages of Kirk Michael close in, the Morgan's exhaust rattles windows pleasingly. The automatic can be paddle shifted; but really, why bother?

In the TT, the bikes slow dramatically for the sharp, deadly hump of Ballaugh Bridge. Catch too much air here and the suspension is ruined. Or worse. The McLaren and the Ariel go over sucking the pavement, but the Morgan loses ground contact at the posted 30-mph speed limit.

We stop again at Sulby. It takes a TT rider about 17 minutes to lap Snaefell. In cars, in traffic, it's closer to an hour. Duff earns a pint by describing the P1's induction noise as a cardio workout in Darth Vader's helmet. In addition to its bike speed, the Ariel provides bike sensations almost as thrilling yet hardly as dangerous. And the Morgan is elevenses with tea and biscuits, BBC Radio 4, and the Queen summering at Balmoral. It is everything that makes

Britain British, and even our pack of jaded, what's-next media types are won over.

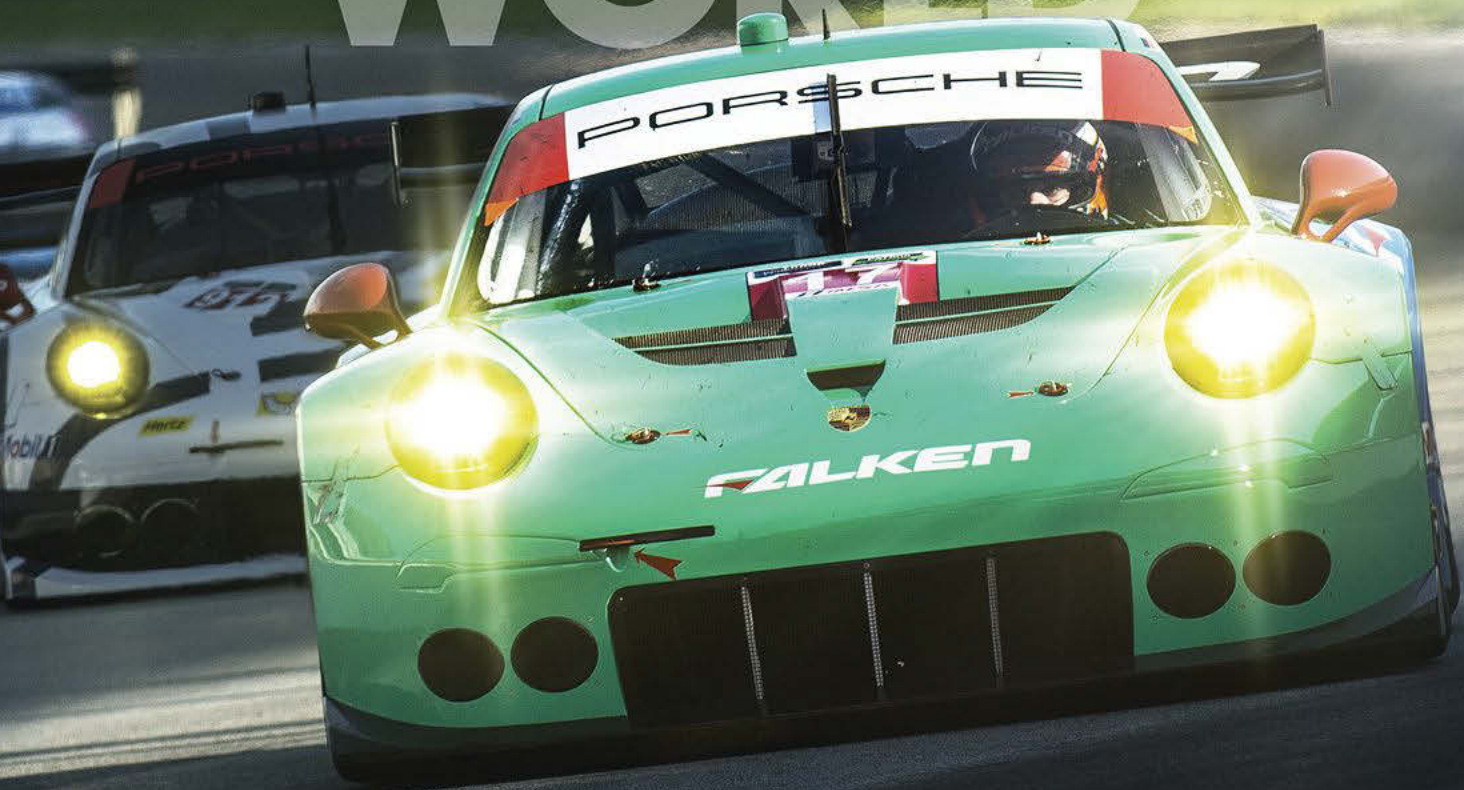
A couple of days later, the best of England travels back to the mainland on the Steam Racket, leaving the Manxmen to await the return of their two-wheeled war horses. ■

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. road test

OLD SCHOOL

LINCOLN CHANNELS ITS PAST
IN SEARCH OF SOMETHING NEW.

by ERIC TINGWALL

AT 80 MPH, the new Lincoln MKX sails down the road as if it were built from 4664 pounds of bubble wrap, fiberglass insulation, and cotton balls. Acoustically laminated glass, lined fender wells, and active noise cancellation create a cabin so quiet that even in a rush-hour commute you can hear Matthew McConaughey's soft drawl over your shoulder:

"I've been driving a Lincoln since long before anyone paid me to drive one... I didn't do it to be cool... I didn't do it to make a statement... I just liked it."

It's true, says the Oscar winner worth somewhere around \$75 million to \$100 million. "Now I have other cars, but I have driven a Lincoln and I now have a Lincoln in my driveway," McConaughey told real-life Crypt Keeper Larry King. We take that to mean he once commandeered a Town Car as part of an on-set prank and his personal assistant now has a new, borrowed ride.

photography by Roy Ritchie



LINCOLN MKX RESERVE AWD



No one is going to pay you to drive a Lincoln. To the contrary, at \$63,275, our Lincoln MKX is priced as if the company has already completed the turnaround, made the comeback, and ascended to the top of the luxury field. The Reserve model isn't even the top shelf of Lincoln's boozy trim levels. Order the MKX Black Label and you can nip at \$70,000 with Venetian leather in hues named ganache and rouge noir (purple's haughty cousin).

With the new MKX and the New York auto show Continental concept, Lincoln proposes to turn left while everyone else in the business veers right. America's other luxury brand won't be lured into Cadillac's uphill battle against the sport-obsessed Germans. Instead, the 98-year-old automaker wants to channel its past, when a Lincoln was stately and confident, and performance was only incidental to the smooth V-8 under the hood. Lincoln marketers call this experience "quiet luxury," and we can confirm that it is far more soothing than the gas-station-grade toilet paper of the same name.

Seemingly unconcerned with the German marques, Lincoln has its sights on the Japanese, generally, and the Lexus RX, specifically. That's obvious not just in the marketing, but in everything from the way the MKX drives to the way you interact with it. Every new MKX wears adaptive dampers, but the shocks are only driver-adjustable if you add four-wheel drive for \$2495. Even then, switching among comfort, normal, and sport modes requires spelunking deep into the instrument-cluster menu where you assign a suspension setting to the transmission's drive and sport positions.

That's the long-winded way of saying

there is no fiddly rocker switch to relax the ride as you drive closer to Detroit proper. Instead, Lincoln hopes its customers set a preferred mode and forget about the driver-selectable function altogether. Or, more likely, buyers will drive their MKX in whatever mode is in effect when they take delivery.

That's not necessarily a bad thing. The MKX covers ground with a pleasant, controlled softness in normal mode. The suspension damps out expansion joints and cracks while the body obediently follows the road. Accurate, nicely weighted steering with a solid sense of on-center helps the MKX feel smaller and lighter than it is. Overall, the MKX embodies Lexus-like smoothness but with greater precision. If

you find yourself torn between a BMW and an MKX, though, consult the DSM-5 for the appropriate diagnosis.

A naturally aspirated 3.7-liter V-6 comes standard. The \$2000 EcoBoost upgrade installs a twin-turbocharged mite of an engine that makes 335 horsepower and 380 pound-feet of torque from 2.7 liters. You can buy the same hardware for \$3030 less in a Ford Edge Sport, but the Lincoln premium adds software that's good for an additional 20 horsepower and 30 pound-feet. That's not enough, however, to compensate for its extra 200 pounds of opulence. The MKX clears 60 mph in 6.0 seconds and strides past the quarter-mile mark in 14.5. The Edge accomplishes the same tasks in 5.6 and 14.2 seconds, respectively.

It took three attempts with two different vehicles to produce our performance results. The first MKX ran roughly a half-second slower, then illuminated a transmission code and began to stumble at triple-digit speeds. Convinced that the turbocharged MKX was capable of better times, we returned to the track a week later with a second MKX to extract the figures that appear here. That second Lincoln made it through four and a half runs before throwing a different transmis-

sion trouble code. A Lincoln rep attributed the hiccups to preproduction trivialities, which is difficult to swallow considering that dealers and customers were taking deliveries concurrently with our tests.

The MKX never faltered on the road, however. Rather, it moved with a torque-

LINCOLN MKX

+ PILLOWY RIDE WITH RESPECTABLE HANDLING, GOBS OF TORQUE.

— PRICED AS IF THE PAST 25 YEARS NEVER HAPPENED.

= BASED ON A FORD BUT FEELS LIKE A LINCOLN.





scrape against plastic flashing left over from the injection-molding process. A high center console crowds the front-seat occupants' kneeroom and creates awkward storage cubbies that have to be accessed from the side. The commodity plastic of the push-button gear selector provides the same sense of occasion as using an ATM, and our resident audiophile loathed the artificially punchy sound of the 19-speaker Revel Ultima audio system, part of a \$4400 Luxury package. Ford's next-generation infotainment system, Sync 3, is nowhere to be found in the MKX, even though the company started hyping its impending arrival nearly a year ago. At least the eight-inch screen for MyLincoln Touch comes with a full complement of buttons and knobs for both the stereo and the climate system.

The Ford/Lincoln engineering relationship still follows that of Chevrolet and GMC more closely than that of Volkswagen and Audi. Yet the tuning differences in the MKX finally deliver a significant character difference. Thanks to this Lincoln's sheet-metal, sumptuous seats, detailed cockpit, memory-foam ride, and ghostly quiet cabin, only those who are in the know will ever identify how much of the MKX is shared with the Edge.

In recent decades, the only reason to drive a Lincoln was out of nostalgia for the brand's glory days. Take Larry King, who spoke with more authenticity when he told McConaughey in the same interview: "I've always driven Lincolns. I've just been a Lincoln guy." The MKX is a crossover both McConaughey and King will enjoy. In returning to its roots, Lincoln has created a vehicle that people can drive for its contemporary merits.

rich authority that suits the full-size weight of today's mid-size crossovers. The six-speed transmission may be shy a couple of ratios, but it delivered fluid gearchanges and never felt as if it was rushing to upshift. Almost miraculously, we averaged 20 mpg, possibly making this the first time we've beaten the EPA combined rating (19 mpg) with an EcoBoost engine.

The MKX is surprisingly good to drive, but Lincoln's new ethos implies that the driving experience is to be minimized in order to maximize the experience of sitting in a cocoon. That explains why, even with a synthetic soundtrack piped through the speakers, the engine at full throttle sounds so far away that you might assume the deep burr is coming from the car ahead of you.

↑ Top: The MKX poses before homes where the bathrooms offer name-brand dual-plys—and might actually be owned by dual-ply heirs.

It does a fine job at coddling, too. For \$1500, 22-way massaging front seats will knead your backside and conform to most body shapes. The outboard thigh bolster automatically deflates to ease egress and entry in a trick that insiders call the "Lincoln embrace," another great name for toilet paper. For the most part, the cabin is finished in convincingly upscale materials: Plush carpeting now wraps up the sides of the cargo hold where there were once slabs of plastic. But there are, literally, a few rough edges inside. Dip your hand deep enough into the door pockets or behind the grab handle on the door panel and you'll

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caranddriver.com

road test

LINCOLN MKX RESERVE AWD



SPECIFICATIONS

PRICE

AS TESTED \$63,275
BASE \$48,575

VEHICLE TYPE: front-engine, 4-wheel-drive, 5-passenger, 4-door hatchback
OPTIONS: Luxury package, \$4400; EcoBoost engine, \$2000; Technology package, \$1720; Driver Assistance package, \$1650; 22-way adjustable front seats, \$1500; tri-coat metallic paint, \$695; Towing package, \$645; Climate package, \$595; Cappuccino leather, \$375; Cargo Utility package, \$365; second-row inflatable seatbelts, \$250; roof-rack side rails, \$195; Cargo Accessories package, \$175; all-weather floor mats, \$75; Enhanced Security package, \$60

STANDARD: power windows, seats, locks, and sunroof; remote locking; cruise control; tilting and telescoping steering wheel; rear wiper

AUDIO SYSTEM: satellite radio; CD player; minijack, 2 USB, and Bluetooth-audio inputs; 19 speakers

ENGINE

twin-turbocharged and intercooled V-6, iron-and-aluminum block and aluminum heads

BORE X STROKE ... 3.27 x 3.27 in, 83.0 x 83.0 mm

DISPLACEMENT 164 cu in, 2694 cc

COMPRESSION RATIO 10.0:1

FUEL DELIVERY SYSTEM direct injection

TURBOCHARGERS BorgWarner K03

MAXIMUM BOOST PRESSURE 20.0 psi

VALVE GEAR: double overhead cams, 4 valves per cylinder, hydraulic lifters, variable intake- and exhaust-valve timing

REDLINE/FUEL CUTOFF 6500/6000 rpm
POWER 335 hp @ 5500 rpm
TORQUE 380 lb-ft @ 3000 rpm

DRIVETRAIN

TRANSMISSION 6-speed automatic with manual shifting mode

FINAL-DRIVE RATIO 3.39:1

4-WHEEL-DRIVE SYSTEM full time with automatic rear-axle engagement

GEAR	RATIO	MPH PER 1000 RPM	MAX SPEED IN GEAR (rpm)
1	4.48	5.7	34 mph (6000)
2	2.87	8.8	53 mph (6000)
3	1.84	13.8	83 mph (6000)
4	1.41	18.0	108 mph (6000)
5	1.00	25.3	133 mph (5250)
6	0.74	34.2	133 mph (3900)

CHASSIS

unit construction with 2 rubber-isolated subframes

BODY MATERIAL: steel and aluminum stampings

STEERING

rack-and-pinion with variable electric power assist

RATIO 14.9:1

TURNS LOCK-TO-LOCK 2.7

TURNING CIRCLE CURB-TO-CURB 38.6 ft

SUSPENSION

F: ind, strut located by a control arm, coil springs, 3-position cockpit-adjustable electronically controlled dampers, anti-roll bar

EXTERIOR DIMENSIONS

WHEELBASE 112.2 in
LENGTH 190.0 in
WIDTH 76.1 in
HEIGHT 66.2 in
FRONT TRACK 64.8 in
REAR TRACK 64.7 in
GROUND CLEARANCE 7.8 in

INTERIOR DIMENSIONS

SAE VOLUME F: 56 cu ft R: 51 cu ft
CARGO (SEATS UP/MAX) 37/69 cu ft

R: ind; 1 control arm with a vertical link, 1 lateral link, and a toe-control link per side; coil springs; 3-position cockpit-adjustable electronically controlled dampers; anti-roll bar

BRAKES

F: 13.6 x 1.4-in vented disc

R: 12.4 x 0.5-in disc

STABILITY CONTROL traction off

WHEELS AND TIRES

WHEEL SIZE/CONSTRUCTION 8.0 x 20 in/ cast aluminum

TIRES Hankook Ventus S1 Noble² 245/50R-20 102V M+S

NOTABLE HIGHLIGHTS

Lincoln says the 2.7-liter twin-turbo V-6 will run fine on 87-octane fuel but you must pump premium if you want all 335 horsepower and 380 pound-feet of torque.

CAR AND DRIVER TEST RESULTS

ACCELERATION

ZERO TO	SECONDS
30 MPH	2.0
40 MPH	3.1
50 MPH	4.3
60 MPH	6.0
70 MPH	7.7
80 MPH	9.7
90 MPH	12.4
100 MPH	15.4
110 MPH	19.1
120 MPH	24.4
130 MPH	30.5
ROLLING START, 5-60 MPH	6.5
TOP GEAR, 30-50 MPH	3.1
TOP GEAR, 50-70 MPH	4.2
1/4-MILE	14.5 sec @ 97 mph
TOP SPEED (GOV LTD)	133 mph

TEST NOTES: Brake-torque for the best times. Don't bother with the paddle shifters. Letting the gearbox shift automatically in sport mode produces the quickest acceleration.

HANDLING

ROADHOLDING, 300-FT-DIA SKIDPAD 0.82 g
UNDERSTEER MINIMAL

TEST NOTES: Lincoln's Torque Vectoring Control pulses the brakes individually to slow the inside wheels and help the MKX turn. It works to great effect here, making this heavy ute feel more neutral around the skidpad than it rightfully should.

BRAKING, 70-TO-ZERO MPH

SHORTEST STOP	171 ft
LONGEST STOP	171 ft
FADE RATING	SLIGHT

TEST NOTES: The gradual but consistent lengthening of the brake stops puts the MKX on the cusp of what we rank as slight fade. In addition to growing stopping distances, the pedal softened noticeably throughout the braking test.

WEIGHT

CURB 4664 lb
PER HORSEPOWER 13.9 lb
DISTRIBUTION F: 58.3% R: 41.7%
CENTER-OF-GRAVITY HEIGHT 26.5 in
TOWING CAPACITY 3500 lb

FUEL

CAPACITY 18.5 gal
OCTANE 91 (recommended)
EPA CITY/HWY 17/24 mpg
C/D OBSERVED **20 mpg**

INTERIOR SOUND LEVEL

IDLE 41 dBA
FULL THROTTLE 72 dBA
70-MPH CRUISING 68 dBA

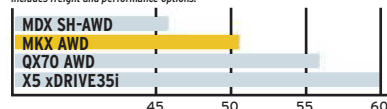
tested by ERIC TINGWALL
 in Chelsea, Michigan



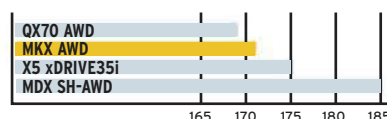
COMPETITORS

ACURA MDX SH-AWD (3.5-L V-6, 290 HP, 9-SP AUTO)
 BMW X5 xDRIVE35i (3.0-L I-6, 300 HP, 8-SP AUTO)
 INFINITI QX70 AWD (3.7-L V-6, 325 HP, 7-SP AUTO)
 LINCOLN MKX AWD (2.7-L V-6, 335 HP, 6-SP AUTO)

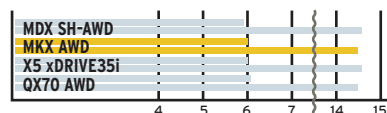
CURRENT BASE PRICE dollars x 1000
 Includes freight and performance options.



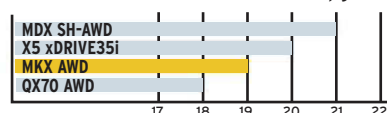
70-0 BRAKING feet



ACCELERATION 0-60 & 1/4-mile, seconds



FUEL ECONOMY EPA combined mpg



Shell
V-Power
NITRO+
 Premium Gasoline
 The Official Fuel of
 CAR AND DRIVER

**HANDLE
YOURSELF
WITH
CONFIDENCE
AND
STYLE**

**ANYWHERE.
ANYTIME.
WITH
ANYONE.**

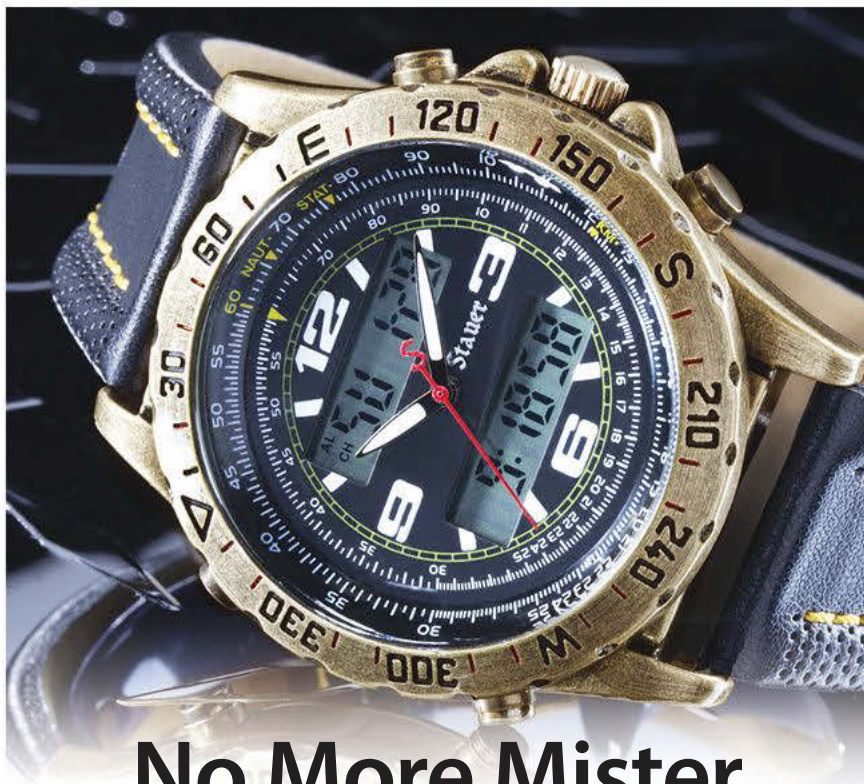
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This is a LOT of machine for not a lot of money. The Stauer Centurion II Hybrid sports a heavy-duty alloy body, antiqued bronze-finished and detailed with a rotating bezel that allows you to track time and speed. The luminous hour and minute hands mean you can keep working into the night. And the dual digital displays give this watch a hybrid ability.

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• Black strap with yellow contrast stitching fits wrists 7" to 9"



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		TIRE PERFORMANCE RATINGS													Total Miles Reported
		PERFORMANCE INDEX (0-100)	WET	DRY	WINTER/SNOW	COMFORT	NOISE	GRAB	STEERING	BRKING	ACCELERATION	OVERALL			
Ultra High Performance All-Season															
Goodyear Eagle Sport All-Season (91 Speed)	1	100%	7.7	8.6	8.5	8.9	9.1	9.1	7.3	6.6	5.7	9.0	9.0	9.3	290,306
Continental ExtremeContact DWS	2	99%	7.6	8.8	8.9	9.2	8.8	8.2	8.2	7.4	7.1	8.6	8.3	8.1	46,172,520
Goodyear Eagle F1 Asymmetric All-Season	3	97%	8.4	8.7	8.9	8.9	9.1	8.9	7.5	6.0	6.3	8.4	8.2	8.2	987,796
Continental ExtremeContact DWS (91 Speed)	4	96%	6.6	8.8	8.9	8.1	8.5	8.5	7.7	6.9	5.7	8.1	8.2	8.4	258,856
Hankook Ventus S1 Hb92	5	95%	7.4	8.6	8.6	8.6	9.1	8.6	7.1	5.6	5.8	8.8	8.6	7.7	1,641,945
General G-MAX AS-03	6	94%	7.0	8.6	8.7	8.4	8.8	8.4	7.6	6.4	6.2	8.0	7.1	8.2	5,578,503
Dunlop SP Sport Maxx AT A/S	7	94%	6.1	8.0	8.5	8.3	8.7	8.4	8.5	7.7	7.0	7.4	6.4		246,500
Yokohama ADVAN S-A	8	94%	7.8	8.5	8.6	8.3	9.0	8.7	6.6	5.3	5.6	8.5	8.3	7.9	4,067,895
Pirelli P Zero Nero M&S	9	92%	7.7	8.3	8.3	8.6	8.9	8.6	6.7	5.3	5.7	8.4	8.2	7.7	23,158,180
Pirelli P Zero Nero All-Season	10	92%	6.7	8.0	8.1	8.6	8.8	8.6	7.1	6.2	6.1	8.0	7.4	7.3	9,581,424
Michelin Pilot Sport A/S 3+ (91 or 93 Speed)	11	92%	7.2	8.8	8.9	9.0	9.2	9.0	6.1	4.7	4.6	8.3	7.8	7.5	1,856,329
Bridgestone Potenza RE970AS Pole Position	12	91%	6.8	8.5	8.8	8.8	9.0	8.9	6.0	4.6	4.7	8.0	7.8	8.1	3,061,040
Kumho Solus ASX	13	88%	7.4	7.7	7.8	8.1	8.5	8.1	6.4	5.3	5.4	8.1	7.9	7.3	40,058,066

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'15 Ford Fusion
215/60R-16 Bridgestone Blizzak WS80
16x7 MSW Type 14



'15 Ford Mustang GT
235/50R-18 Pirelli Winter Sottozero 3
18x8 Sport Edition A11



'15 Dodge Durango SXT
265/60R-18 Goodyear Ultra Grip Ice WRT SUV
18x8 RIAL W10X

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High-Tech Winter Traction



STUDLESS ICE & SNOW

Developed to provide ice and snow traction similar to studded winter tires without using studs, these tires typically trade high-speed ratings and some handling responsiveness for enhanced snow and ice traction.



PERFORMANCE WINTER / SNOW

Developed as high-speed winter tires for European driving conditions, these tires typically trade some deep snow and ice traction for enhanced dry and wet road traction, handling and high-speed capability.

Traditional Winter Traction



STUDDABLE WINTER / SNOW

Developed to accommodate optional metal studs that enhance ice and hard-packed snow traction. When studded (studding available for \$15 per tire), these tires typically trade some noise and ride comfort for extra ice and packed snow traction. When not studded they provide a low-cost winter tire option.

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16x7 Sport Edition CS1



'15 Chevrolet Silverado 1500 4WD
255/70R-17 Michelin Latitude X-Ice Xi2
17x8 Sport Edition TK6



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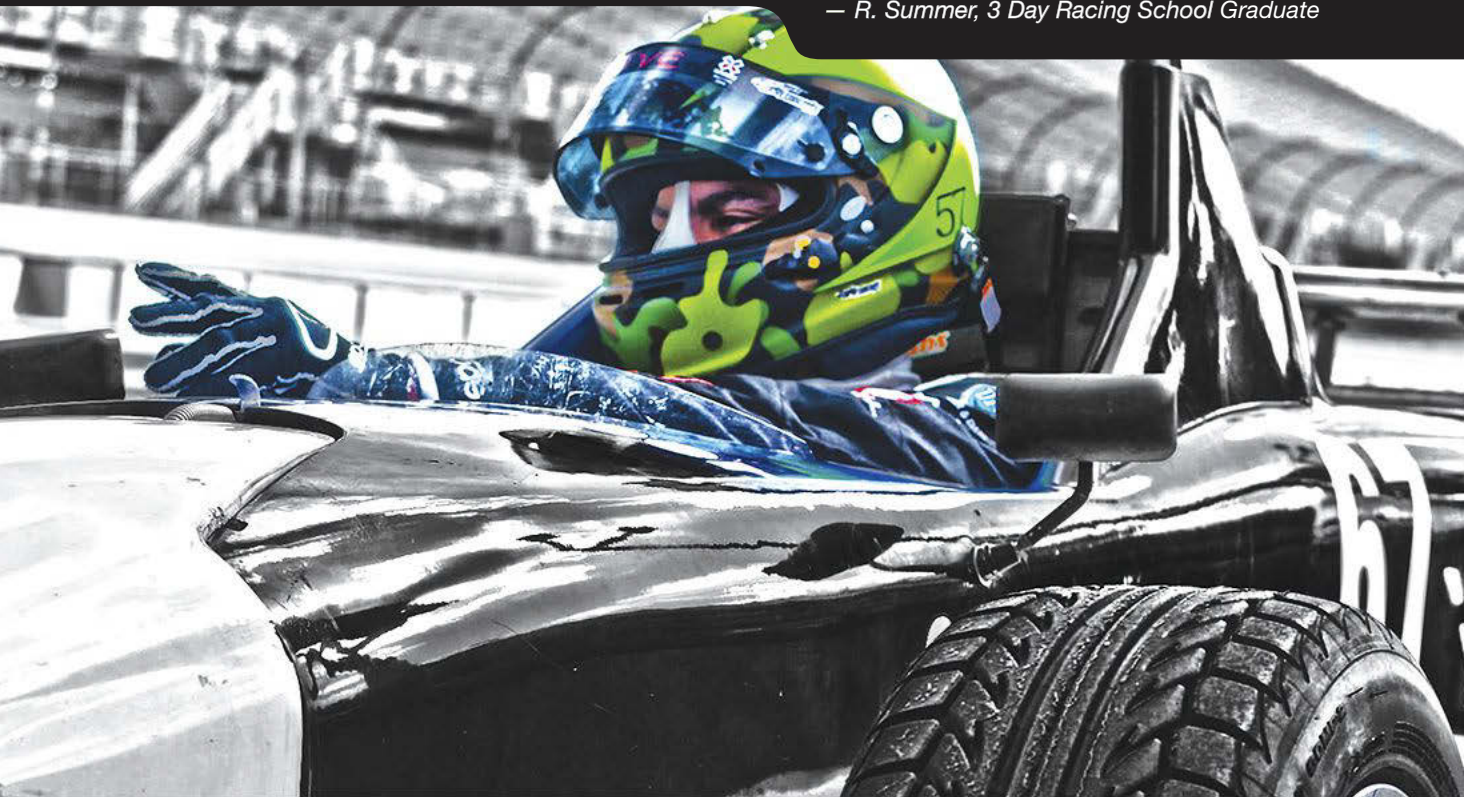
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LONG-TERM TEST

— 2015 GMC YUKON XL DENALI 4WD —

099

Moving Mountain



THE JOYS AND SORROWS OF LIFE WITH A ROCK-SOLID THREE-TONNER. *by Don Sherman*

Deep inside, we're no different than your average motorhead. We live to thrash sports cars on challenging roads. And for those occasions when two seats won't cut it, we grab the keys to sports sedans. So what's up with spending 40,000 miles in an XXXL SUV that's bigger than many NYC apartments?

Fact is, our transportation needs run the gamut, just like yours. Boxsters and Miatas—vehicles of choice for two-person getaways—are misfits on family vacations. We occasionally move furniture, take camping trips, and shuttle visitors to and from the airport. Some of us avoid our families altogether by spending our weekends at racetracks. Which is to say, sometimes we need something big.

Meet Big Den, a 2015 GMC Yukon XL Denali 4WD that casts a shadow twice as large as a Fiat 500's. Mashing the scales at just over 6000 pounds, this Lone Star limo hauls eight, tows 7900 pounds, and comfortably sleeps a parent and two adventurous kids. Full disclosure: When this 40,000-mile gantlet was complete, we negotiated an extra 8000 miles to accommodate pressing vacation and racing needs.

This is the flagship of GMC's fleet. Starting with the longer 130-inch wheelbase (versus the regular Yukon's 116), four-wheel drive, and sumptuous Denali trim, our order monger exercised restraint by adding but two options to the \$69,375 base price: a \$4160 Touring package (entertainment system with second- and third-row DVD screens, sunroof, theft-deterrent system with self-powered horn, and head-up display) and \$495 22-inch wheels.

Most Yukons are sold with Denali trim for good reason: There's substance behind

the geographically disorienting badge. The \$16,780 (\$16,880 for 2016) upgrade from a base Yukon SLE 4x4 adds a 6.2-liter V-8, heated and cooled perforated-leather front seats, a heated second-row bench, a power-folding third row, magnetic-ride-control dampers, HID headlamps, active noise cancellation, a larger alternator, heated mirrors, a customizable driver's display, and, last but not least, sparkling exterior body-side moldings.

The heart of the beast is a V-8 that's closely related to the Chevy Corvette's LT1 engine. Major features—direct fuel injection, variable intake- and exhaust-valve timing, and cylinder shutdown during light loads—are common to both. The GMC has milder valve timing to skip the Stingray's nervous idle jitters, which means power is down a touch, but both engines deliver the same 460-lb-ft torque punch. Even though this is a naturally aspirated pushrod design in a world of boosted, multivalve, overhead-cam engines, it's perfectly suited to the SUV mission, being smooth, reliable, and reasonably fuel efficient. One demerit is that premium fuel is recommended.

After break-in, Big Den clocked a 6.5-second run to 60 mph, 15.1 seconds at 96 mph

→ Right: It has plenty of gadgets, but the Denali's interior feels more like a tarted-up mid-priced truck than a \$74K luxury vehicle.



2015 GMC YUKON XL DENALI 4WD

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, rear/4-wheel-drive, 8-passenger, 4-door hatchback

PRICE AS TESTED \$74,030

BASE PRICE \$69,375

ENGINE TYPE: pushrod 16-valve V-8, aluminum block and heads, direct fuel injection

DISPLACEMENT 376 cu in, 6162 cc

POWER 420 hp @ 5600 rpm

TORQUE 460 lb-ft @ 4100 rpm

TRANSMISSION 6-speed automatic with manual shifting mode

WHEELBASE 130.0 in

LENGTH 224.3 in

WIDTH 80.5 in

HEIGHT 74.4 in

PASSENGER VOLUME 176 cu ft

CARGO VOLUME 39 cu ft

CURB WEIGHT 6060 lb

POWER CONSUMED @ 70 MPH 44 hp

POWER CONSUMED @ 100 MPH 106 hp

WARRANTY

3 years/36,000 miles bumper to bumper

5 years/100,000 miles powertrain

3 years/36,000 miles corrosion protection

6 years/100,000 miles rust-through protection

5 years/60,000 miles roadside assistance

MODEL-YEAR CHANGES

2015.5: GM's new eight-speed auto is fitted to all Denalis built after October 2014.

2016: Improved infotainment system with Apple CarPlay, capless fuel filler, new automatic lane keeping and headlamp high-beam control.

▼ C/D TEST RESULTS

PERFORMANCE

ZERO TO 60 MPH **NEW** 6.5 sec 40,000 5.9 sec

ZERO TO 100 MPH 16.2 sec 15.4 sec

ROLLING START,

5-60 MPH 6.8 sec 6.6 sec

1/4-MILE **15.1 sec** **14.5 sec**

@ 96 mph **@ 97 mph**

BRAKING, 70-0 MPH 189 ft 181 ft

ROADHOLDING,

300-FT-DIA SKIDPAD 0.75 g* 0.75 g*

TOP SPEED (GOVERNOR LIMITED) 113 mph

EPA FUEL ECONOMY, CITY/HWY 14/20 mpg

C/D-OBSERVED FUEL ECONOMY **16 mpg**

UNSCHEDULED OIL ADDITIONS 0 qt

OPERATING COSTS (FOR 40,000 MILES)

SERVICE (5 SCHEDULED, 2 UNSCHEDULED) \$245

NORMAL WEAR \$0

REPAIR \$0

GASOLINE (@ \$3.16 PER GALLON) \$7900

DAMAGE AND DESTRUCTION

WINDSHIELD REPLACEMENT \$580

LIFE EXPECTANCIES (ESTIMATED FROM 40,000-MILE TEST)

TIRES 55,000 miles

FRONT BRAKE PADS more than 100,000 miles

REAR BRAKE PADS more than 100,000 miles

WHAT BITS AND PIECES COST

HEADLAMP \$1295

ENGINE AIR FILTER \$40

OIL FILTER \$6

WHEEL \$597

TIRE \$236

WIPER BLADES (LEFT/RIGHT/REAR) \$12/\$12/\$12

FRONT BRAKE PADS \$112

*Stability-control inhibited.

➔ Right: The Denali's inconveniently high load floor is a consequence of its rudimentary rear suspension. Still, it's awfully roomy.

in the quarter-mile, and a governed top speed of 113 mph. While that's roughly a dead heat with the last Ford Expedition we tested, the Blue Oval easily beats the GMC's 70-to-zero-mph stopping distance and 0.75-g (inhibited by stability control) cornering ability. At the 40,000-mile final test, we discovered that launching this rig in four-wheel-drive mode trimmed 0.6 second from both the zero-to-60-mph and quarter-mile-ET figures, moving it toward acceleration parity with the smaller and lighter Mercedes-Benz GL450 three-row transporter.

When it breaks free of parking maneuvers and the ol' suburban cut-and-thrust, this GMC finds its comfort zone. The longer you drive it, the less its dwelling-sized dimensions annoy you. The V-8 is virtually silent in its work, even when half its cylinders go on furlough to save fuel. We were amazed to see the four-cylinder indicator light up with a loaded trailer in tow at 70 mph, at least on level ground. Our 16-mpg overall mileage tied the aforementioned Benz. Multiply that fuel economy by the 30.9-gallon tank capacity and you've got enough range to leap whole states in a single bound.

Unfortunately Big Den's transfer case



RANTS AND RAVES

RON SESSIONS

The 15 mpg we got while towing 5000 pounds at the speed limit is impressive; so is more than 20 mpg cruising unloaded.

DANIEL PUND

Looks grotesque to me, like a beady-eyed brute. Was bothered by the steering wheel's offset to the left of the driver's seat only in theory but not in practice.

JARED GALL

Third-row bench seat is like riding on a crate in the bed of a pickup, except for outward visibility, which is blocked by the fattest C-pillar in the business. No wonder rear-most kids plant their faces in tablets, laptops, or the DVD screens.

RUSTY BLACKWELL

Cubbies, bins, and power points abundantly served our four-person household on a trip to Tennessee. At Tail of the Dragon, handling and body control were decent for such an immense beast. Unless the highest allowable gear was manually selected, the transmission tended to be searching on mountain roads.

JEFF SABATINI

Parking poses a problem, prompting me to conclude that this vehicle has crossed the line into too-bigness. Relative to its exterior dimensions, the cargo hold provides little room versus the packaging provided by a Chrysler minivan.

NATHAN SCHROEDER

On long trips, this SUV devours miles in huge chunks, like Kobayashi consuming hot dogs. It's so large that driving it around town scares the hell out of me.



↑ Top: GMC named this paint color Iridium after the world's second-densest element. That's somehow fitting for this three-ton beast.

did not uphold the engine's impeccable dependability record. One editor inadvertently cycled the ignition button while the driveline was in AUTO (on-demand four-wheel drive) mode, locking the transfer case in 4HI (locked 4WD). According to a service foreman at West Chevrolet in Alcoa, Tennessee, this was a glitch common to all 2015 GM four-wheel-drive pickups and large SUVs. To temporally mend the crow hop caused by turning on dry pavement with four-wheel drive fully engaged, the dealership reflashed an electronic control module.

We waited two months and 6300 miles until our local dealer installed a software fix issued by GM as a "service update." During this period, we also noticed an intermittent whine that seemed to be com-

ing from the driveline. In fact, this was an electrical noise generated by the transfer-case control module mounted near the accelerator pedal. Thankfully, that annoyance simply disappeared.

Other than that, though, only five other visits to the dealer were necessary over 40,000 miles for tire rotations, inspections, and oil and filter changes. This routine service cost us only \$245, less than half the expense of replacing a windshield fractured by debris from Michigan's war-torn roads. (Two trivial recall fixes—one for adding an A/C-system sticker, a second for correcting owner's-manual language related to dinghy towing—were installed during the regular service stops.)

Showing no favoritism to any point of the compass, we enjoyed trips to New York, Texas, and Arizona. Our logbook lists six visits to the Bluegrass State as well as multiple runs to Michigan's enchanting Upper

Peninsula. Driver commentary was, for the most part, complimentary. The 15 beverage holders and six power receptacles were deemed adequate for today's hard-gamin', hard-juice-boxin' kids. The luxury of three separate climate-control thermostats avoided lots of whining. Several did grouse about the offset between the steering wheel and the center of the driver's seat, but added that this quirk is soon forgotten while driving. The hinge-down entertainment screens obliterate the inside mirror's view, a problem other makers avoid by offsetting these screens to the side. Third-row headrests also scuttle cop sightlines, but fortunately they can be removed or compressed out of the way. Satellite-radio reception was occasionally missing in action, and the navigation system drove many straight to their smartphones for needed route info. Considering its \$74,030 sticker, we found the leather, stitching,



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plastic, and wood trim underwhelming. Some thought that all the seats were too firm for long-haul comfort, while others rated the front buckets' thigh support too soft to sustain the Denali's cornering ability. It takes a village.

Big Den understood the concept of dead-straight-ahead, and its steering held us there with minimal correction. The brake pedal is firm and commendably linear in its delivery of more deceleration for each increment of additional pressure. More amazing: The brake pads took their licking while towing without wearing out; our measurements predict that they will last more than 100,000 miles. The magnetic-ride-control dampers keep the body

↓ The Denali's 6.2-liter V-8 proved totally reliable. The same cannot be said of its transfer case or this LeMons race car.



on an even keel without spanking occupants over bumps and expansion joints. The original set of Bridgestone Dueler H/L Alenza tires powered us safely through the snow season, in part because 22-inch winter tires weren't readily available.

This truck's trailer-sway-control programming works in total transparency. Air bladders integrated with the rear dampers level the Denali when towing heavy loads, but we wouldn't mind a knob on the dash to drop the vehicle for trailer hookup.

The six switches that operate the power-folding rear seats got a serious workout. Two raise and lower the 60/40-split rear row. Four fold and pivot the middle row forward, though erecting that bench is a manual operation. One parent longed for a means of sliding the middle row rearward to stop his kids from kicking the driver's seat in time with whatever horrid Taylor Swift song was playing.

As part of the 2015 redesign, GMC had added a three-inch spacer to make the rear load floor reasonably flat, if not perfectly level. The result is that every bicycle, suitcase, or anvil you pack into this ute must be lifted three feet off the ground. Also, the new compartment under the cargo floor is largely useless except for transporting pizzas. That said, there's ample room between the wheelhouses to haul four-foot-wide sheets of building materials like a pro.

Is there a better way to configure the hardworking back half of this vehicle? Nine years ago, GMC ditched a traditional ladder frame to improve the efficiency and flexibility (if not towing ability) of its front/four-wheel-drive Acadia. Ford enhanced the full-size Expedition/Navigator duo by interlacing husky frame members around an independent rear suspension, thereby lowering the cargo floor. We hear from the GM grapevine that an IRS is under consideration for the next generation of mega SUVs, a long-overdue move in our opinion, especially for the luxury-oriented Cadillac and GMC brands.

The wood-paneled wagons that cruised suburbia decades ago evolved into today's vast selection of haulers ranging in size from Mazda's CX-3 to our Big Den. Let this be your guide to working your way through the two-box fleet: Buying just enough is always smarter than picking way too much. ■

★ FLEET FILES



▲ 2015 HONDA FIT EX

29,828 MILES

34 OBSERVED MPG

It's a little funny that the Fit, Tesla, and Yukon share a page, but the Fit is a bridge between behemoth and BEV. Both the Denali and Fit swallow people and stuff well; there's legroom for four six-plus-footers, or one editor's entire apartment (sans furniture in the Fit's case). And the Honda and Tesla are marvels of efficiency. At 34 mpg, the Fit is just 5 mpg short of our long-term 2010 Honda Insight. Practicality and efficiency aside, there's less to swoon over. Between the engine drone at 70 mph and seats lacking long-haul support, it's no wonder the Fit is only 30,000 miles in after a full year.



▲ 2015 TESLA MODEL S P85D

8722 MILES

74 OBSERVED MPGe

This 40,000-mile journey will be taken no more than 253 miles at a time. That's the EPA-rated range of our first-ever battery-electric long-term car, a 691-hp, seven-seat Tesla. Our longest stint to date is just 161 miles, achieved as one editor undertook a 1500-mile road trip, during which still-fresh range anxiety resulted in 14 charging stops. While stopping every two hours to juice up is hardly a luxury experience, at least the miles pass quickly in our loaded \$136,720 Model S. At the track, our P85D bolted to 60 mph in 3.3 seconds. Impressive, but Tesla claims a time of just 3.1 seconds.



Tim McGraw has a challenge for you.

I've seen first-hand how diabetes impacts Americans from all walks of life. It's affected my family, friends and fans.

- Tim McGraw

Nearly 30 million Americans have diabetes - most have type 2 diabetes. That's why I'm speaking out about how important it is for those living with type 2 diabetes to get their blood sugar under control.

I'm encouraging all Americans to join me and challenge their family and friends with diabetes to get to their A1C goal.* I've learned that about one-third of adults living with diabetes are not at their A1C goal, which can lead to serious health problems over time.

Let's change that statistic.

If you have diabetes, take the challenge. Pledge to work with your doctor to set and reach your own A1C goal. Also be sure to learn if you are at risk of low blood sugar and how to reduce that risk. **

Join me now at **AmericasDiabetesChallenge.com**.

Together, we can make a difference.



America's Diabetes Challenge was developed
in collaboration with Merck

* A1C measures average blood sugar (glucose) over a 2 to 3 month period.

** Low blood sugar (glucose), known as hypoglycemia, can make you feel shaky, dizzy, sweaty and sometimes faint.

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NEW FINDS We want our vehicles to do it all, to take the whole crew anywhere and through any kind of weather in safety and comfort, with plenty of space. The three-row mid-size SUV is arguably the best at filling that bill—it's the ultimate family hauler, whatever the size or age of the family. With available state-of-the-art technology and a flexible, inviting interior, the Chevrolet Traverse is the very model of the modern family vehicle.



106

11.2015

BABY TALK

What to expect when you're expecting and expect to drive places. *by Alexander Stoklosa*

HAVE YOU EVER WATCHED a young family try to make it out of the house and into the car? It has the urgency of a pit stop, only instead of fresh tires, fuel, and a squeegee guy, you've got mom and dad relocating an apartment's worth of toys, strollers, and wipes into the family ride. Overkill? If the gift of parenthood has yet eluded you, know this: Keeping the baby calm and/or asleep in the car is job one, and these are the car-specific items you must have:

SUNSHADE

Swaddled and strapped into those hefty car seats, babies are susceptible to sweatin' to the oldies on a sunny day. A cool baby is, ideally, a sleeping baby. Sunnies's stick-on shades forgo suction cups for a cleaner look and allow the windows to roll down when installed. *Sunnies Static Cling Window Sunshade (2-pack), \$19.99*

DIAPER BAG

Nobody looks cool carrying a diaper bag. So skip it for a Tumi Ashwin tote, which has pockets shaped like diapers, bottles, and the like. Should hard use overwhelm your Tumi, the brand's legendary customer service will get you back to the changing table in no time. *Tumi Ashwin Tote, \$295*

WEATHERTECH CARGO LINER

Baby-support detritus can inflict mass destruction on your trunk. These waterproof liners can spare a few scrapes and bumps and make great impromptu changing stations. *Price varies by model*

WHITE NOISEMAKER

Babies are cruel monsters who, instead of falling asleep, throw fits. White-noise generators can help baby fall asleep. An alternative: Play tapes of *Car and Driver TV*. *Marpac Marsona TSCI-330, \$74.95; mobile Marsona battery pack, \$14.95*

CHILD

In the rush to load all the baby's stuff into the car, don't forget the baby. *Price varies by model*

TOY

We can't really offer a specific toy for your child—kids latch on to different ones. But may we suggest a squishy Babies "R" Us car? Start 'em early. *Soft Baby Buggy, \$3.99*

□ *this month:* NEW ADDITIONS

gearbox

SEAT YOURSELF

Looking to buy a child seat? The choices are as boundless as they are daunting. Here are a few key things to consider before making your purchase. And don't forget to test-fit a seat in your car—an ill-fitting seat is unsafe.

EASE-OF-USE RATINGS: There are no government crash ratings for child seats, but NHTSA does publish an "Ease of Use" assessment for each one. Since it is estimated that 75 to 80 percent of parents make a mistake when installing a car seat—or strapping their child into one—this matters more than you'd think.

LATCH ANCHORS: Nearly every new car sold in the U.S. since '02 comes with LATCH anchors in the seats that theoretically ease the fitment through a click-in mechanism, as opposed to the old elaborate struggle between the child seat and the seatbelt.

RECALLS: Child seats can be recalled for safety-related defects and other concerns. Be sure to register your seat with the manufacturer to receive pertinent NHTSA recall notices.

SIZE, AGE, EVERYTHING MATTERS

Not every child seat fits every scenario. The Centers for Disease Control and Prevention recommends a rear-facing seat from birth to roughly age 2; from age 2 to 5-plus years (depending on the child's height and weight), a forward-facing seat is the way to go; and between the forward-facing chair and full seatbelt use, you should use a booster seat to align a smaller occupant's chest and thighs with the car's seatbelt. Still not sure? You can plug your child's birthday, height, and weight into NHTSA's dynamic seat-selector tool at safercar.gov for a more accurate seat recommendation.

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• HATCHBACK

LAND ROVER RANGE ROVER SPORT SVR

TESTED □ Quicker than its siblings, uncouth exhaust noise, pace with (rhinoceroslike) grace. □ Not as quick as its competitors, not as large a leap over its excellent siblings as it could be. *by Daniel Pund*

Behold, the majesty that is the Blue Rhinoceros! We photographed this example in its natural habitat of Birmingham, Michigan, but the mighty Blue is also known to congregate in Greenwich, Connecticut, and Newport Beach, California, or wherever there are sufficiently snooty feeding options.

At 5438 pounds, our Estoril Blue Land Rover Range Rover Sport SVR weighs about as much as a full-grown White Rhinoceros, with which it shares its unlikely

agility and propensity to charge. This powerful beast, says its maker, can lap the Nürburgring Nordschleife in an impressive, and slightly comical, 8 minutes and 14 seconds, quite quick by the standard of pachyderms with horns.

We have come to grips with the idea that car buyers are attracted to a breed of two-and-a-half-ton performance brutes. With the Porsche Cayenne Turbos and M-, AMG-, and SRT-branded bulls roaming the automotive savannah, it was only

a matter of time before Land Rover birthed its own version.

To do so, Land Rover has turned up the boost on its familiar supercharged 5.0-liter V-8. At 550 horsepower and 502 pound-feet of torque, the SVR's engine pumps out 40 more horsepower and 41 more pound-feet of torque than the version in the standard Range Rover Sport Supercharged. And it's only 26 pounds heavier than the last Sport Supercharged we tested. So, each of the SVR's horses has three-quarters of a pound less rhino to move than the non-SVR. That helped the SVR hit 60 mph in 4.3 seconds and the quarter-mile in 12.8 seconds, knocking 0.3 second off each of the standard Supercharged model's times. The last BMW X5 M we tested posted a 3.8-second run. Maybe a few tenths doesn't matter much. But it is worth noting that a Dodge Viper we tested in 2005 got to 60 mph in 3.8 seconds. These are strange and wondrous times.

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 **TOYOTA**
Let's Go Places

Thing is, the standard Range Rover Sport Supercharged is already a ridiculously quick brick at 4.6 seconds to 60 mph. And that model has “Sport” right in the name. What use is there for the SVR? Judging by our track tests, not much. The SVR wears the same 275/45R-21 Michelin Latitude Sport all-season tires that are optional on the Sport Supercharged. And so the SVR could better its less expensive brother by only 0.01 g on the skidpad (0.87 to 0.86). Using the same braking system as the regular Supercharged model, our SVR actually took longer to stop from 70 mph (179 feet versus 167).

But if the SVR isn't a great deal quicker or grippier than the Sport Supercharged, it does feel a little more tensed and eager. It uses the same excellent eight-speed automatic transmission, the same suspension setup, the same four-wheel-drive system, and the same electrically assisted steering system as the lesser Sport model, but Land Rover has modified them for more immediacy and responsiveness.

For example, Land Rover has tuned the Sport Supercharged's suspension system—four-corner air springs, adaptive magnetorheological dampers, and hydraulic anti-roll bars—for better body control and less roll. Further, the company swapped out the rear subframe bushings for stiffer pieces. The result is impressive: The SVR feels competent and spry, if not exactly lithe or overtly playful. There's a small penalty to ride quality compared with the standard Sport Supercharged. Sharp, high-frequency bumps are now felt instead of just heard, but the overall package still feels comfy enough not to call too much attention to itself.

We presume that increased attention is part of what buyers are looking for if they're shopping for an SVR. We're not sure all the other Range Rover and Range Rover Sport drivers in Birmingham pegged the SVR as something special. Certainly our version's \$1800 worth of intense blueness probably piqued some interest. But the rest of the get-up—a deeper, hungrier-looking front fascia; a new rear-bumper cover for the quad exhausts; the blacked-out trim and front grille; and the curious black fender vents that appear to have auxiliary fender vents attached to them—is pretty subtle and



↑ The SVR [middle] seen roaming the tony savannah of Birmingham, Michigan. But it's not so couch that it doesn't fart on overrun.

tasteful. Well, except maybe for those fender vents. Alas, we digress.

The interior gets less fettling. It comes with 14-way leather seats with large side bolsters and somewhat incongruent strips of reflective material on the seatbacks and bottoms. Similar to the seats in our long-term 2014 Jaguar F-type, the SVR's chairs have integrated, nonadjustable headrests, the lower part of which will poke tall drivers in the upper back. The seats are otherwise supremely comfortable. There's a near-matching set in the rear outboard positions with a flat bench portion between them for the unlucky fifth occupant.

The SVR comes standard with aluminum interior trim, but our test vehicle arrived with \$2300 of carbon fiber instead. In fact, our example came with \$12,195 worth of optional extras (upgraded sound system, adaptive cruise control, etc.) that brought the total to a stunning \$124,540. But rhinos don't come cheap.

That \$12K in optional niceties is on top of the \$31,400 that the SVR tacks on to the

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, 4-wheel-drive, 5-passenger, 4-door hatchback

PRICE AS TESTED \$124,540

BASE PRICE \$112,345

ENGINE TYPE: supercharged and intercooled DOHC 32-valve V-8, aluminum block and heads, direct fuel injection

DISPLACEMENT 305 cu in, 5000 cc

POWER 550 hp @ 6500 rpm

TORQUE 502 lb-ft @ 2500 rpm

TRANSMISSION: 8-speed automatic with manual shifting mode

DIMENSIONS

WHEELBASE 115.1 in

LENGTH 191.8 in

WIDTH 79.5 in

HEIGHT 70.1 in

PASSENGER VOLUME 108 cu ft

CARGO VOLUME 28 cu ft

CURB WEIGHT 5438 lb

▼ C/D TEST RESULTS

ZERO TO 60 MPH 4.3 sec

ZERO TO 100 MPH 10.5 sec

ZERO TO 140 MPH 23.1 sec

ROLLING START, 5-60 MPH 4.8 sec

1/4-MILE 12.8 sec @ 111 mph

TOP SPEED (governor limited) 144 mph

BRAKING, 70-0 MPH 179 ft

ROADHOLDING,

300-FT-DIA SKIDPAD 0.87 g

FUEL ECONOMY

EPA CITY/HWY 14/19 mpg

C/D OBSERVED 14 mpg

■ **TEST NOTES:** In spite of moderate understeer, the throttle is effective at steering this vehicle at the limit. Automatic tranny shifts well short of redline, so shift manually for best times.

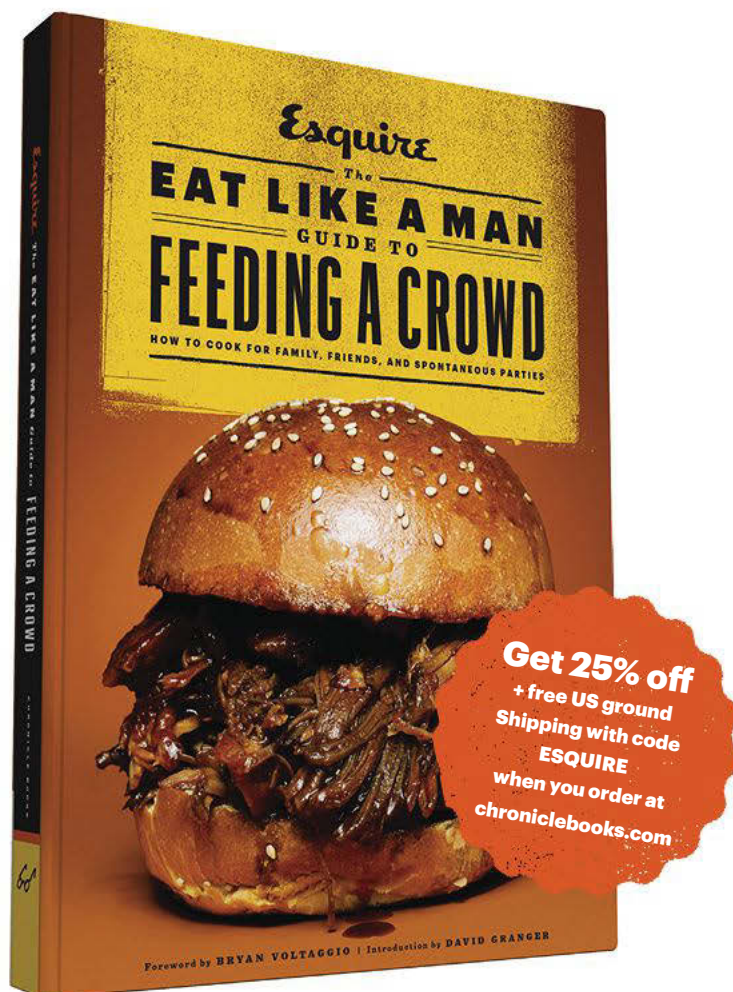
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Sport Supercharged price. Is the SVR worth that much over the Sport Supercharged? Of course not. But we're deep in the land of diminishing returns, and the Sport Supercharged is already more performance SUV than even seemed possible a decade ago.

But let's say you appreciate the safari pedigree of a Land Rover but also want to cut a lap of an evil, old German racetrack—or maybe you want to stand out from the herd at your local Rover-heavy watering hole. You will want just such a beast.

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Esquire



SCION iM

TESTED Cheap sticker, looks like it was on the cover of *Sport Compact Car* in 2002. Cheap interior, drives like it was engineered in 2002. *by Jeff Sabatini*

It's a curious turn for Toyota's so-called "test laboratory division," this new model. The iM eschews the overtly Japanese weirdness that established the Scion brand and made the original 2004–2007 xB the most successful of Toyota's JDM product-line raids. This conventional four-door hatchback with its factory-supplied body kit and metallic-chartreuse paint seems like something Toyota developed during the import-tuner craze and only found parked in a garage in Torrance, California, after the company began planning its move to Texas.

The \$19,255 iM joins the stalwart tC, the boffo FR-S, and the new iA (a rebadged Mazda 2 sedan) in filling out Scion's four-car lineup for 2016. They're all cheap, small, and hard to sell, a sober referendum on the youthful image Scion was designed to exploit. It's easy to wonder why they're not just sold as Toyotas.

Elsewhere on the globe, the iM is a Toyota. It's the Auris in Europe and Japan, and in some markets it's a Corolla hatchback. In the U.S., it shares a platform and engine with the Corolla, though the iM uses a control-arm rear suspension that's more sophisticated than the Corolla's torsion beam. That's where the good news ends, because the 1.8-liter four-cylinder they share makes just 137 horsepower and 126 pound-feet of torque here, three horses less than in the Corolla LE Eco.

It took us 8.6 seconds to reach 60 mph in the iM, more than a second slower than the 160-hp Ford Focus, and the Focus isn't even the quickest hatchback in its class. The Volkswagen Golf goes from zero to 60 mph in 6.8 seconds, its turbocharged 1.8-liter producing 170 horsepower and 184 pound-feet of torque and making the iM's naturally aspirated engine seem as dated as mailing that *Fast and the Furious* DVD back to Netflix.

The iM comes with a standard six-speed manual, though a CVT is also available. The relatively long and imprecise throws of the shifter and the transmission's three over-drive ratios make it more of a com-

▼ SPECIFICATIONS

VEHICLE TYPE: front-engine, front-wheel-drive, 5-passenger, 4-door hatchback	
PRICE AS TESTED	\$19,255
BASE PRICE	\$19,255
ENGINE TYPE: DOHC 16-valve inline-4, aluminum block and head, port fuel injection	
DISPLACEMENT	110 cu in, 1798 cc
POWER	137 hp @ 6100 rpm
TORQUE	126 lb-ft @ 4000 rpm
TRANSMISSION: 6-speed manual	
DIMENSIONS	
WHEELBASE	102.4 in
LENGTH	170.5 in
WIDTH	69.3 in
HEIGHT	55.3 in
PASSENGER VOLUME	90 cu ft
CARGO VOLUME	21 cu ft
CURB WEIGHT	3003 lb

▼ C/D TEST RESULTS

ZERO TO 60 MPH	8.6 sec
ZERO TO 100 MPH	26.9 sec
ZERO TO 110 MPH	35.3 sec
ROLLING START, 5-60 MPH	9.3 sec
1/4-MILE	16.8 sec @ 84 mph
TOP SPEED (governor limited)	112 mph
BRAKING, 70-0 MPH	176 ft
ROADHOLDING, 300-FT-DIA SKIDPAD	0.80 g
FUEL ECONOMY	
EPA CITY/HWY	27/36 mpg
C/D OBSERVED	27 mpg

■ TEST NOTES:

The iM hits the top of second gear at 59.8 mph, requiring two shifts and making the zero-to-60 run that much slower.



muter-grade experience, but at least self-shifting ups the iM's engagement level. It's a shame that the steering and brakes are so numb, because the iM's firm ride and planted body seem to indicate untapped chassis potential. Then again, understeer is what you get when you drive the iM to its low 0.80-g roadholding limit, likely let down by its all-season tires.

A bigger letdown comes inside the iM. A high beltline makes the cockpit feel tight, and the dashboard's clifflike verticality would be more at home in a crossover. The infotainment system could use a few more buttons. Cargo space trails the Focus's and the Golf's, not because they're that much larger than the iM, but because both competitors are wider and taller. Scion uses coarse fabric on the door trim and elsewhere in the iM, which looks shabby and can't possibly wear well. And the plastics are plainly retrograde compared with class leaders such as the Mazda 3 and Golf.

Indeed, the iM enters a hatchback pack that is more competitive than at any time since its 1980s heyday. Those heady times brought us such cash-intensive marketing experiments as General Motors' Geo brand, a dumping ground for the same sorts of cars Scion is trying to sell. For the record, GM finally gave up in 1997 and replaced the Geo badges with Chevy ones.



← It's a Corolla interior in the key of Scion—which is the same key as Toyota, but on a different color kazoo.

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PORSCHE CAYMAN GT4

TESTED GT3 steering feel, manual only, flat-six song, easy fun. Getting in and out without looking injured, we thought it'd be quicker. *by Tony Quiroga*



Southern California's Angeles Forest Highway over the San Gabriel Mountains is almost flawlessly smooth. And though construction crews have been bringing this stretch of road to a halt for months, they're almost done. Get out there before 7:30 a.m. and you'll enjoy an uninterrupted stretch of fresh black carpet draped over a mountain. Get there later and you'll have a painful wait through several one-way construction zones. We

got up early one recent morning to take the Porsche Cayman GT4 on this route to our desert test facility.

We didn't think Porsche would ever build this car. It's a Cayman with the 911's engine for base-911 money: \$85,595. Many have heralded this as fratricide. But here's why the Grand Cayman won't kill the 911: Not many GT4s will be made, the GT4 is manual only, and 911s sell because they are 911s.

The 3.8-liter flat-six out of the Carrera S is humming along, mere inches behind us. In the GT4, it makes 385 horsepower, which is 15 horses shy of what it does in the Carrera S, but 45 more than the Cayman GTS and 35 more than the base 911. Below 5000 rpm, the engine whines and whirs; spin toward the 7600-rpm redline and the pulsing turns into a 10,000 conga-drum jam-o-rama.

↓ The GT4 isn't quicker than a Cayman GTS at road-legal speeds, but its steering is maybe the best currently available anywhere.

▼ SPECIFICATIONS

VEHICLE TYPE:	mid-engine, rear-wheel-drive, 2-passenger, 2-door hatchback
PRICE AS TESTED	\$104,815
BASE PRICE	\$85,595
ENGINE TYPE:	DOHC 24-valve flat-6, aluminum block and heads, direct fuel injection
DISPLACEMENT	232 cu in, 3800 cc
POWER	385 hp @ 7400 rpm
TORQUE	309 lb-ft @ 4750 rpm
TRANSMISSION:	6-speed manual
DIMENSIONS	
WHEELBASE	97.8 in
LENGTH	174.7 in
WIDTH	71.5 in
HEIGHT	49.8 in
CARGO VOLUME	5 cu ft
CURB WEIGHT	3050 lb

▼ C/D TEST RESULTS

ZERO TO 60 MPH	4.1 sec
ZERO TO 100 MPH	9.0 sec
ZERO TO 150 MPH	22.9 sec
ROLLING START, 5-60 MPH	4.7 sec
1/4-MILE	12.3 sec @ 117 mph
TOP SPEED (drag limited, mfr's est)	183 mph
BRAKING, 70-0 MPH	151 ft
ROADHOLDING, 300-FT-DIA SKIDPAD	1.01 g
FUEL ECONOMY	
EPA CITY/HWY	18/23 mpg
C/D OBSERVED	17 mpg

TEST NOTES: Easy to extract this car's full potential: Launch between 3300 and 3600 rpm. Zero brake fade, excellent pedal feel. Tall gearing saps some of the sensation of quickness.

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CAR AND DRIVER

The six puts out a big 90 decibels at full whack. Don't worry, though; it's a pleasant sound, never annoying.

Up on the mountain, we're not at the redline very often. First and second gears are incredibly tall—second is good for nearly 80 mph. That gearing takes a bit of around-town zip out of the GT4. We measured a zero-to-60 time of 4.1 seconds,





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identical to a manual Cayman GTS we'd previously tested. Beyond 60, though, the GT4 pulls away from the GTS. By 110 mph, it's a second ahead. In the quarter-mile, the GT4 posts 12.3 seconds at 117 mph. For context, know that a PDK-equipped Carrera S goes through the quarter in 12.4 seconds at 116 mph with the Cayman GTS arriving in 12.5 seconds at 113 mph.

But power and performance are just two elements of the GT4's 911 kinship. The entire front suspension is lifted from the 911 GT3. On the new asphalt, we can detect some understeer. On the skidpad, the GT4 pushes more reliably than the boldly neutral Cayman GTS and has a little less grip, even on Michelin Pilot Sport Cup 2 tires (1.01 g's versus 1.04). But the GT4's chassis eagerness and steering feel are infused with GT3 goodness. At speed, it's almost as if the electric power steering is completely unassisted. You're flooded with information about the surface, the tires, and the available grip. Porsche didn't ruin the ride here, either. Provided you stay away from the sport setting on the PASM dampers, you'll experience a firm, but spouse-friendly, ride.

A few subtle tweaks strengthen the rear end and allow for camber adjustments, but the biggest difference between the GT4's hindquarters and that of lesser Caymans is seen in the 911-sized rear tires. The increase in front-tire width is not as great as that of the rear rubber and may be one reason why the GT4 understeers more than the Cayman GTS.

But the GT4 makes a stronger fashion statement than other Caymans. A new nose houses gaping cooling ducts, the rear end has a small diffuser and a big wing.

You sit low in the GT4, especially with the optional (\$4730) single-piece seats from the 918 Spyder; they make a graceful entry or exit impossible. Between the seats is a glorious six-speed manual, fitted with Porsche's short shifter that makes snapping off ridiculously quick gearchanges easy. Hit the sport button and the engine automatically blips the throttle to match revs on downshifts. It's hard to break the habit of heel-toe downshifting, but the computer makes rev matching easy.

With the exception of getting in and out of its seats, the GT4 makes everything easy. It's the first Cayman that's an excellent alternative to a base 911. ■



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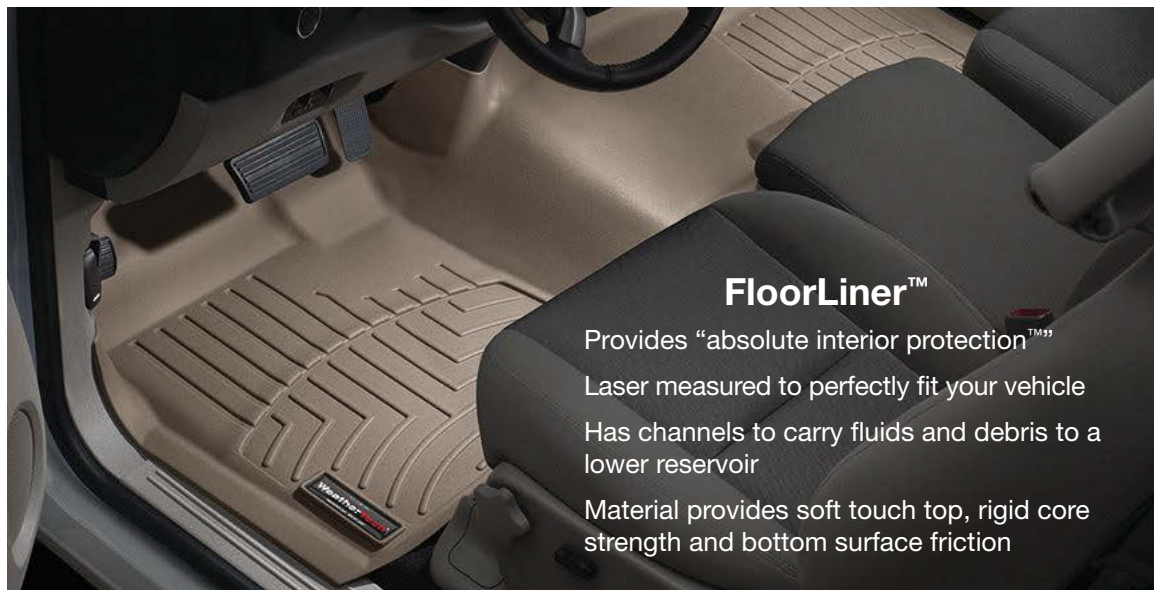
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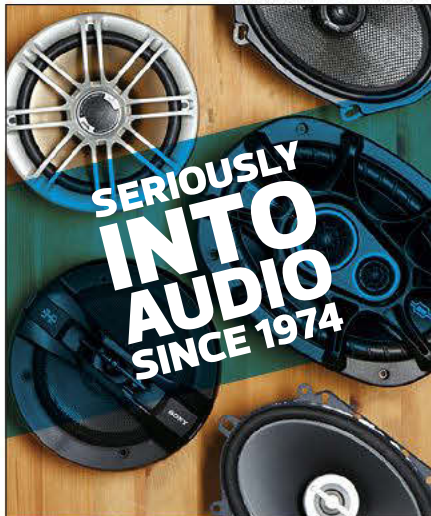
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EDDIE CHEEVER JR.

Former Formula 1 stalwart, Jaguar sports-car driver, and Indy 500 winner Eddie Cheever Jr., 57, talks about his broadcasting career and modern motorsports.

C/D: How long does it take to prep for the Indy 500 broadcast?

EC: When I was first asked to do it, I went back and listened to a good year's worth of James Hunt on the BBC, doing his F1 stuff, just to understand how a driver can add to the equation. Then I went back to view a lot of races. To converse with two people for hours on TV, well, you need to add something that's not right then appearing on the screen. And you don't want to get too technical or you'll lose 80 percent of the audience. So I guess it was about two months of preparation.

C/D: Worst moment in broadcasting?

EC: When Dan Wheldon crashed in 2011. I was so upset that they'd put him at the back of the grid. Then it was like God picked up all those race cars and threw them. We were on the air a very long time knowing that Dan had died but not officially allowed to say anything. You could tell from the other drivers' body language. The violence of the thing. I remember being profoundly angry. Furious. With a deep sense of loss.

C/D: Has IndyCar become too much of a spec series?

EC: I ask that same question of F1 right now. Yet F1 is the pinnacle of all technology when it comes to cars. But Indy cars were never the pinnacle of technology. It was just America's oldest series, and it was principally noted for its incredibly high speeds. Lots of people would like to see everyone building his own Indy car, like in the old days, but it's not feasible. Some team will show up and spend \$100 million. All I know is that for six years we've had incredible Indy 500s, and every year it's gotten better. The racing is hard, dangerous, and engaging.

C/D: Any thoughts on Gene Haas's Formula 1 bid?

EC: I'm a big admirer of what he did in NASCAR. I see his F1 ambitions as next to impossible, but, okay, this is the guy's moonshot. I'd like to see him hire an American driver as his number two. The number one needs to be the best F1 driver he can afford. Haas has the technical savvy and is an astute businessman. That's a good start.

C/D: Any funny Bernie Ecclestone stories?

EC: I don't think of Bernie as a funny man. When he said "I want you to go do something for me," I just did it. He was honest in his requests. That's rare in F1. I don't know what they'll do when they have to replace him. No heir apparent. They may have to take F1 in a different direction.

C/D: What racing series is getting it right most often?

EC: All my friends will hate me saying this, but it's still NASCAR—its commercial strength, its financial strength.

C/D: You're among the last of the "renaissance men" who raced Formula 1, factory Jags at Le Mans, and Indy cars. Does today's specialization concern you?

EC: It does. I was always curious what the other cars felt like. It was like playing catch with your father, then wondering what it



would be like to pitch for the Yankees. I got to race at so many tracks, in so many countries, in so many weather conditions, with so many talented people—an incredible life. So I'm saddened other drivers don't get that experience.

C/D: Did growing up in Rome kick-start your racing career?

EC: I was near the go-kart track where Ronnie Peterson had raced. There was a big wave of Italians going into racing right then, so I was just part of it. I was known as the "American from Rome," so I guess they thought of me as Italian. Italy subjected me to every form of racing. So, yes, it helped.

C/D: Was there one person who really influenced you?

EC: Enzo Ferrari. Of course, he was deeply ingrained in Italian culture. We always had three icons: the Pope, the soccer team, and Mr. Ferrari. He influenced all of racing.

C/D: Did you encourage Eddie III to race?

EC: I was divorced from his mother when he was three, so he was raised in Italy. I did not encourage him to go racing. But he had a dad who raced, so it was normal he'd give a thought to it. He has put together all his racing deals himself. He has had great exposure to everything from F3 to NASCAR, and that's really a jump, like becoming fluent in Chinese after only knowing English. He's 22, young enough to do anything he wants.

C/D: Anything you'd have done differently?

EC: I got married one week before my first F1 race. I had wonderful children from that union. But if you're going to race, race. If you're going to build a family, build a family.

—JOHN PHILLIPS

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